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INFECTIONS AND INFLAMMATIONS OF THE INVESTING TISSUES OF THE TEETH

GINGIVAE, PERIDENTAL MEMBRANE, CEMENTUM AND ALVEOLAR PROCESS *

HERBERT A. POTTS, M.D.
CHICAGO

In order that we may better comprehend the pathologic changes which occur within the mouth, and the bearing which these changes may have on the more remote parts of the body, it is necessary that we review some of the embryology and minute anatomy of these parts.

As G. V. Black has given us much of the nomenclature employed in studies of these parts, and as the terse language used by him best expresses his observations concerning his studies of them, I have copied largely from his last book.[1]

The word "gum" or "gums" is the name applied to the inelastic fibrous mat which covers the hard palate and alveolar processes. Its fibers are closely interwoven with the fibers of the periosteum, which is very firmly adherent to the bone, rendering these soft tissues immobile. The word "gingiva" is applied to that portion of the gum through which the tooth erupts, and, later, to that soft tissue between the teeth, which rests on the alveolar crests.

In health, its free border thins away to a knife edge that lies close to the enamel of the crown, but which may be easily lifted away by any thin, narrow, flat instrument, disclosing the subgingival space within which, under certain conditions, serumal calculus is deposited on the surface of the enamel.

The development of the gingivae and alveolar processes is simultaneous with the growth and eruption of the teeth; and, as they are special organs, they disappear with the loss of the teeth.

With the growth of the teeth and their investing structures, the connecting organ, namely, the peridental membrane, is formed. This is a system of inelastic fibers which suspend and hold the teeth within their sockets. Of particular importance and interest are those fibers which make up the transseptal group, which are attached to the proximal surfaces of the teeth and extend through the septal gingivae over the bony septum from tooth to tooth, recurring in each proximal space, and holding the teeth together continuously from one third molar around the arch to the third molar of the opposite side. This arrangement of fibers keeps the tooth contacts tight; consequently, when, from loss of these fibers between the teeth from injury or disease, the teeth are pulled apart, food becomes packed between them, often with serious consequences in the establishment of pyorrhea.

The attachment to the bone is made possible by the osteoblasts, which lay down bone around the ends of the fibers, mortising them in, as it were; but it is the ends which are attached to the teeth which should claim special attention and study because there is nothing similar elsewhere in the body, and because in this study lies the hope of successful therapeutics.

The cementoblasts lie on the cementum of the tooth just as the osteoblasts lie on the bony wall of the alveolus between the ends of the fibers of the peridental membrane, some of them remaining in the cementum just as the osteoblasts remain in the lacunae of the bone; but there is a marked difference between cementum and bone in that the cementum, as it has no blood circulation within it as has bone, is not capable of self-repair.

All repair of cementum and all new cementum is made by the cementoblasts of the peridental membrane and not by the cells which are incarcerated within the cementum.

Of paramount importance is the fact that this repair takes place only under complete asepsis. Cementum stripped of its peridental membrane, infected and pus-soaked, is a dead tissue, and no reattachment to it by living tissue can be made.

Furthermore, when, by infection, the cemental ends of the fibers of the peridental membrane are detached from the cementum, the fibers themselves disappear and there are none left to become attached, even if repair of cementum were possible. As has been stated, repair is not made by the cement corpuscles retained within the lacunae; and, because the infection which loosened the attachment of the fibers to the cementum also destroyed the cementoblasts of the peridental membrane directly over that area, new growth of cementum is impossible.

With the disappearance of the transseptal group of fibers of the peridental membrane, there is also a disappearance of the corresponding bone of the alveolar process into which they were inserted.

To recapitulate: When, as a result of infection, the attachment of the fibers of the peridental membrane is severed, we have not only a pus-soaked cementum incapable of repair, which exerts a negative chemotaxis tendency, but also the actual disappearance of the fibers and bone into which they were inserted, and the loss of the cementoblasts which make such a repair possible.

Replacing this loss of tissues is a mass of suppurating inflammatory tissue not protected by epithelium, from

* Chairman's address, read before the Section on Stomatology at the Seventy-Third Annual Session of the American Medical Association, St. Louis, May, 1922.

1. Black, G. V.: Special Dental Pathology, Chicago, Medico-Dental Publishing Company, 1915.

which toxins and bacteria find their way into the system and through which other bacteria of the mouth may readily pass.

Concerning the cementum, it makes no difference whether the suppuration occurs at the gingival attachment or at the apex of the root, in which case, following the death of the pulp, the infection passes through the apical foramen or foramina into the tissues immediately surrounding the apex. Thus we see that these two chronic infections, namely pyorrhea and chronic alveolar abscess, both propagated by dead cementum, are the results of two factors, the first being a gingivitis, the second, following the death of the tooth pulp.

The first requisite in the conservation of healthy teeth and their investing structures is the avoidance of gingivitis, which is caused by numerous faulty conditions, among which are (1) salivary calculus and (2) serumal calculus, and which is due to (*a*) lack of contact of the teeth; (*b*) improper contact; (*c*) deviation from the normal, smooth contour of the teeth; (*d*) lack of cleanliness; (*e*) misuse of the toothpick, rubber-band, floss-silk or tooth-brush; (*f*) overhanging margins of fillings; (*g*) ill-fitting crowns, etc.

In a study made by Dr. Arthur D. Black of 500 mouths of young adults of an average age of 26 years, none of whom as yet had disease of the peridental membrane, only 5 per cent. of them were free from gingivitis; in the remaining 475 there were 4,253 areas of gingivitis, an average of 8.53 for each person of the 500 examined.

Ninety-five per cent. of all persons examined had one or more areas of gingivitis, 55.1 per cent. of these being due to trauma, 37 per cent. of which were due to imperfect dental operations, less than one third due to salivary calculus and less than one sixth to serumal calculus.

Chronic suppurative pericementitis (pyorrhea) has its beginning in a gingivitis which may result from many causes; and, while serumal calculus beginning in the subgingival space may be the primary etiologic factor, it is usually a result rather than the cause, as within the pus pocket the calculus is deposited on the denuded root from the serum which constantly bathes the chronically infected tissues. Thus, we consider serumal calculus a cause if on the enamel, and as a result if on the cementum.

Pyorrhea is probably not due to any specific organism. The greatest achievements in medicine have been in the prevention of disease rather than in its cure, and so must the greatest dental service be attained by prevention rather than by restoration. This prevention must begin with the eruption of the temporary teeth and continue at intervals, depending on the necessity of each individual, through life.

It has been shown that gingivitis is the primary factor in pyorrhea, loss of gum tissue, loss of the alveolar process and finally loss of the teeth; consequently, it is the primary gingivitis which should not be allowed to continue and become chronic.

Physicians should be able to recognize inflammation of the gums as they recognize inflammation in other parts of the body. They can be easily taught to detect ill-fitting crowns, overhanding margins of fillings, salivary calculus and even serumal calculus in pus pockets, and should refer cases to the dentist who can remedy these defects.

Because of the insidious onset and chronic course, gingivitis is frequently neglected by the dentist and is not recognized by the physician until, from a toxemia or development of an infection in some remote part of the body, the patient seeks relief, of his physician, at which time irreparable local damage has been done and distressing disease may have developed from the primary focus within the mouth.

Routine physical examination should include a more thorough oral examination, and the treatment of oral lesions should be based on a working knowledge of pathology.

In the vast majority of cases, neglected gingivitis becomes chronic, and its duration, over a period of months or years, not only leads to a destruction of normal tissues both soft and bony, but is a menace to health in two ways: (1) by the constant suppuration with absorption and swallowing of bacterial by-products, and (2) by the entrance of bacteria themselves into the lymph and blood streams, with their arrest in distant parts where they set up other foci of infection.

ABSTRACT OF DISCUSSION

DR. BYRON C. DARLING, New York: What Dr. Potts has said bears out what we are about to learn from the roentgen-ray examination of the teeth. If one will observe the alveolar margins carefully, one will see that the little entering wedge, the swelling of the pericementum, is present in many of the teeth. In fact, it seems almost universal. What Dr. Potts has said gives me an opportunity to know that the increase in width of the black line is a pathologic condition and is so recognized by the periodontist.

DR. F. B. MOOREHEAD, Chicago: The fibers of the periodontal membrane are attached through the agency of the cementoblasts and, whenever the cementoblasts are destroyed in an appreciable area, there is no hope of any reattachment of the periodontal membrane; the surface thus denuded becomes, in substance, foreign matter. Any repair that takes place under these circumstances is scar tissue and is not safe.

DR. HERBERT A. POTTS, Chicago: I wish to emphasize the importance of taking care of these infections and irritations which do become chronic. They cause little or no pain or inconvenience to the patient and, in the course of months or years, result in serious losses.

ANGINA PECTORIS

SOME CLINICAL CONSIDERATIONS *

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From time to time it is with some profit that we make an inventory of whatever information we can bring to bear on the study of a disease to see what progress has been made. In the study of heart disease it is unnecessary to dilate on the great aid in understanding the arrhythmias that has resulted from modern cardiography. The latter has thrown some light on diseases of the heart muscle, although there still is considerable vagueness and speculation concerning the relation of heart muscle disturbances to changes in the electrocardiogram. Likewise, the study of the vital capacity of the lungs and dyspnea of cardiac patients has afforded us some aid in following the course of our patients, in cataloguing them into various groups according to the degree of compensation, and to some extent in prognosticating as to the future course of

* From the Medical Clinic of the Peter Bent Brigham Hospital.
* Read before the American Climatological Association, Washington, D. C., May 2, 1922.

events. It is my personal judgment, although this point is disputed by some observers, that the introduction of the Wassermann test has taught us that syphilis of the heart is comparatively rare in clinical medicine except when the disease has involved the aorta or aortic cusps; i. e., in the absence of aortic insufficiency and aneurysm of the aorta. Turning our attention to angina pectoris, the question arises as to what progress has been made in the management of this extraordinary disease.

It is not the purpose in this study to discuss the theories as to the cause of angina pectoris or to give a complete clinical picture of the disease. Some points of interest that developed in the course of a study of 103 cases among patients admitted to the Peter Bent Brigham Hospital and seen in private practice will be taken up, with emphasis on those features that apparently were helpful in the clinical management of the problems that presented themselves.

TERMINOLOGY

There is a great deal of confusion in the literature and in the minds of many of us as to where to draw the line between angina pectoris and other cases of heart disease with precordial pain or even functional and vasomotor disturbances. It would be well if we could do away with such terms as false angina, pseudo-angina and juvenile angina. Unfortunately, at times it is the only recourse we have; but to use such vague terms only conceals our ignorance or uncertainty of the true state of affairs. It would be well for physicians to take the position that the diagnosis of angina pectoris is to be used in heart disease when it is meant that the patient has attacks of oppression or constriction or pain in the chest, generally in the region of the sternum (not particularly in the precordium or apical region), having a more or less characteristic distribution and radiation, especially related to effort and associated with some other symptoms, such as mental apprehension, fear of death, temporary dyspnea, immobility and vasomotor disturbances such as pallor and perspiration. It must also mean that the patient whose condition is so diagnosed is likely to die suddenly, either with little warning or after only a short illness. It is important to keep the latter connotation in mind, for other types of heart disease have repeated periods when the patient is confined to bed with increasing degrees of cardiac failure and the accompanying signs of decompensation. But the latter patients are likely to die in bed, not unexpectedly but after a lingering illness. Occasionally angina pectoris accompanies valvular disease or chronic myocarditis, and the clinical picture is thus complicated. If this attitude is accepted, there will be less confusion in our terminology. The expression, "This patient has a little angina" should mean that the diagnosis is angina pectoris, but that the pain, not the disease, is slight; for the patient with only a slight amount of pain may be dead of angina in a few days; on the contrary, another patient who has severe precordial pain may not have angina at all and may live for a great many years.

ETIOLOGIC FACTORS

The average age of this group of patients was 54.1 years; that of the males was 54.3, and of the females, 53.6. It is significant that patients with angina pectoris are comparatively more often encountered in general practice than in hospital wards, for many of them are ambulatory and do not consider themselves sick and, what is more important, are regarded rather lightly by the attending physician. To include none but hospital cases might give wrong impressions, because it seems that while women with "minor complaints" frequently reach the public wards of hospitals, men do so only reluctantly, as they try to continue at their work. Of these 103 patients there were sixty-eight males and thirty-five females, i. e., almost twice as many of the former as of the latter. This sex discrepancy is striking and deserves some explanation. It is especially significant when we consider that vascular hypertension does not affect males as often as females; in point of fact, it is much more common in women. Dr. J. P. O'Hare,[1] who has studied this disease in a large number of patients, finds that of 153 cases of vascular hypertension, 64.7 per cent. were in females and 35.3 per cent. in males. Appreciating that some hypertension is commonly associated with angina pectoris, there must be some other factor that turns the proportion in favor of males. A point of great importance in this connection, I believe, consists in physical work and muscular strength. Men are physically stronger than women and, in general, work harder. It is unusual to find angina pectoris in weak, feeble, underdeveloped or undernourished persons. Many of them are somewhat overweight and, what is more important, most of them are well set, sturdy and of the muscular type. I have been struck by the good physical development of most of the patients with angina, and with the excellent history as to general health and freedom from minor ailments. This has been so striking that it has seemed to warrant a place among etiologic factors. The weak do not have angina; it is rather the well and sturdy.

What specific diseases stand in any etiologic relation to angina pectoris? Syphilis has generally been given the place of first importance. I believe that this point is overemphasized. To be sure, it is often difficult to determine whether or not syphilis is the cause of any chronic condition. The history obtained from the patient is unreliable. The postmortem findings are often either uncertain or disputable, even when the disease may be present. At times outspoken evidence of syphilis is found, particularly when there are typical changes in the aorta or in the central nervous system. In general, however, the Wassermann reaction of the blood will come as near to the truth as any other means we have, and can fairly be used for purposes of this study. Of the eighty-one patients on whom this test was made, the reaction was positive in only six, i. e., 7.4 per cent. Thus, it follows that in about 7 per cent. of these cases syphilis was the cause of angina pectoris, and therefore the disease plays a relatively unimportant rôle as an etiologic factor. However, it is imperative to watch for this condition, for, if discovered in its early stages before the aorta and aortic valves have become extensively involved and distorted, anti-syphilitic treatment may promise more than if there was no specific condition to treat. The presence of a diastolic murmur, heard best at the base of the heart, should always be carefully watched for and, if present, make one investigate more carefully for syphilis.

Among other conditions that stand in some etiologic relation to angina pectoris is diabetes. Its frequency is probably greater than is generally appreciated. Of

1. O'Hare, J. P.: Personal communication to the author.

the 103 patients in this series, seven had diabetes. Gout has long been regarded as a possible precursor of angina, and this was found to be so in five patients. There were two with hypertrophic prostate, but this probably is no more than the accidental incidence of two diseases in the same individual. The frequency of organic valvular disease associated with angina is not very striking. There were two instances of typical mitral stenosis, one of which came to postmortem examination and was there verified. This patient died very suddenly. In addition, there were two patients with rheumatic aortic insufficiency, one having typical signs of aortic stenosis as well. Both of these patients were young, 19 and 29 years old, respectively, although they suffered attacks that were typical of angina pectoris. A third patient was a woman of 48 who had typical anginal attacks and showed signs of aortic insufficiency. The Wassermann reaction was negative, and there was no history of rheumatic fever. This may have been an instance of syphilis, notwithstanding the negative serum reaction.

By far the most common and frequently the only important accompanying condition is arteriosclerosis. Unfortunately, no careful tabulation as to the comparison of the frequency of arteriosclerotic changes in the various parts of the body is possible from this study. It would be instructive to know whether angina occurs in those patients with large blood vessel sclerosis or with changes in the finer vessels. O'Hare [2] has recently been studying this question with relation to vascular hypertension, and has found that simple hypertension is most commonly associated with sclerosis of the retinal arteries rather than with the large vessels such as the radial or brachial, and that the patients with the lower blood pressure had more sclerosis of the large vessels and less of the finer ones. It is my opinion that, since angina pectoris generally occurs with a moderate elevation of pressure, sclerosis of the large blood vessels is associated with it rather than sclerosis of the finer ones. Certainly most patients that I have examined with angina have shown few changes in the retinal vessels as compared to those with vascular hypertension. The majority of the patients in this series had definite sclerosis of the radial arteries, although there was a smaller group in whom the peripheral blood vessels did not seem to be very striking.

BLOOD PRESSURE OBSERVATIONS

A study of the blood pressure in this series has brought out some interesting figures. The average systolic pressure of ninety-nine patients was 160.6 mm., and the diastolic was 95.0 mm. The lowest systolic was 80 mm., and the highest, 260 mm. Most of them were between 140 mm. and 200 mm. There were sixty-four of such patients in this series. Eleven had a pressure over 200 mm., and twenty-four under 140 mm. Several of those who had a low pressure died in the attacks while under observation or shortly after it, and may well have had a higher blood pressure before the fatal attack. Some years ago, with Tranter,[3] I reported two fatal cases of infarction of the heart with coronary thrombosis, in both of which there was a strikingly low blood pressure. In some others of this series with low blood pressure undoubtedly the same pathologic condition was present. There were several instances, however, of normal blood pressure, i. e., from 120 to 140 mm., in patients suffering from typical angina who gave no evidence of such a serious complication as infarction of the heart.

Some observations on the blood pressure were made in relation to the attacks of angina pectoris and the administration of nitroglycerin. One patient just before an attack had a systolic blood pressure of 140 mm. and a diastolic pressure of 90 mm. During the attack it rose to 180 mm. systolic and 120 mm. diastolic, and then at one minute intervals after the administration of nitroglycerin by mouth the readings were 184/110, 158/90, 150/90, 140/90, 140/90 and 140/90. Another patient, who had a blood pressure of 110 mm. systolic and 70 mm. diastolic, showed an increase to 164 mm. systolic and 94 mm. diastolic during an attack; 0.9 mg. of nitroglycerin was then given by mouth, and at two minute intervals the readings were 155/90, 140/88 and 132/88. In a third patient, just before the attack the blood pressure was 162 mm. systolic and 88 mm. diastolic; during the attack at 7:09 p. m. before any medication was given it was 154 systolic and 78 diastolic. Then 0.0003 gm. of nitroglycerin was given at 7:11 p. m. The blood pressure was 148 systolic and 76 diastolic, and the pulse 100. Another tablet was given, and at 7:15 p. m. it was 140 systolic and 82 diastolic, and at 7:18 p. m. it was 138 systolic and 84 diastolic and the pulse was 100; at 7:20 p. m. the blood pressure was 144 systolic and 82 diastolic; the third tablet was given, and the blood pressure was 142 systolic and 78 diastolic; this was at 7:23. Finally, a fourth tablet was given, and the blood pressure was 140 systolic and 78 diastolic at 7:25 p. m. By this time the pain had disappeared. A fourth patient who had a blood pressure of about 200 mm. for some years was suddenly taken with a severe attack of angina pectoris. When seen shortly after the attack had begun, the systolic pressure was 160 mm., and during that day the pressure gradually fell to 120 systolic and 80 diastolic. On the following day it was 110 mm. He died twelve days after the onset of this attack. The observations on the first two patients disclosed a distinct increase of the blood pressure, with the development of an attack of angina and a fall in the pressure as nitroglycerin made the attack subside. The third case showed no appreciable change with the onset of the attack, but the pressure diminished somewhat as the attack subsided after nitroglycerin had been given. It is difficult to say from these observations whether the subsiding of the attack caused a fall in pressure or the reverse. The latter view seems the more likely, and probably any other factor that might reduce the blood pressure could end the attacks.

What general conclusions can be drawn from this study of the blood pressure in angina pectoris? It is evident that any pressure from subnormal to a marked hypertension may exist in patients suffering from angina. The extremely high pressure of from 200 to 250 mm., although fairly common in adult age, occurs in only about 10 per cent. of the patients with angina. Some of these patients subsequently develop a lower blood pressure, and therefore a good deal will depend on the stage of the illness during which observations are made. Furthermore, the low blood pressure needs to be interpreted carefully. Some of the patients turn out to be young persons who have rheumatic aortic dis-

2. O'Hare, J. P.: Paper read before the Interurban Club meeting, Boston, April 7, 1922.
3. Levine, S. A., and Tranter, C. L.: Infarction of the Heart Simulating Acute Surgical Abdominal Conditions, Am. J. M. Sc. **155**: 57 (Jan.) 1918.

ease as the underlying cause of the angina pectoris, while another group contains those patients who are seen in an attack of closure of a coronary vessel. In the latter, the pressure may be very low, 90 mm. or less, while the patient appears to be in a fair general condition.

EXAMINATION OF THE HEART

On examining the heart, one is generally impressed by the absence of significant findings in most instances of angina pectoris, and yet it is this negative state of affairs that is very important and makes us be on our guard. Frequently the differential diagnosis is between a simple minor complaint such as indigestion, constipation or neurosis, and this most deadly disease. The heart is generally enlarged, slightly or moderately, rarely markedly. Not infrequently, on percussion, no evidence of enlargement could be made out. In some of these cases the roentgen ray or the electrocardiograms disclosed hypertrophy that was previously overlooked. In rare instances all methods failed to reveal any appreciable enlargement of the heart.

On auscultation, frequently no murmurs were heard. In this series of 103 cases, forty-seven showed no murmurs. There were forty-nine in which a systolic murmur was heard at the apex or the base of the heart or at both points. The systolic murmur heard in the forty-nine cases just referred to did not indicate a real endocarditis. Seven patients had diastolic murmurs. Two of these were definitely, and one probably syphilitic, and four had rheumatic valvular disease. Of the latter group three had rheumatic endocarditis of the aortic valve, and one of the mitral and tricuspid. It follows from these figures that valve disease in angina pectoris is unlikely unless there is in addition a rheumatic history of a syphilitic process.

The rhythm of the heart remains for the most part undisturbed in cases of angina both during attacks and during the intervals between attacks. In a small number of cases there may be heard an occasional extrasystole; but the dominant rhythm is maintained. During the more serious cases of coronary infarction, heart block may result, as was described in a previous publication,[3] and at times paroxysms of tachycardia.[4] It was quite surprising that out of 103 patients in this series only one had persistent auricular fibrillation, and yet these two types of heart disease affect individuals at the same average age. There was one patient who had transient auricular fibrillation, and in another it was a terminal event. During the same period covered in this study, 423 heart cases of persistent auricular fibrillation were observed, and about 200 of these were observed in elderly persons and were associated with chronic myocarditis, i. e., not of the rheumatic valvular type.

It seems most extraordinary that of these 200 persons suffering from chronic myocarditis with auricular fibrillation, not one had angina pectoris. The single instance of auricular fibrillation and angina that did occur was in a patient with rheumatic mitral stenosis. This incompatibility between the two conditions is of distinct practical aid. If a patient has chronic heart disease and auricular fibrillation, he is extremely unlikely to develop angina pectoris; and likewise, those with angina pectoris virtually always have a dominant regular heart rhythm.

The quality of the heart sounds is of some interest to us, particularly with regard to the first sound at the apex. In many instances this was distinctly diminished in intensity, and occasionally it was absent. In interpreting the loudness of heart sounds, due consideration must be given to the thickness of the chest wall and the amount of lung tissue in front of the heart. When sounds are distant as a result of obesity or overlying breasts, both sounds are affected; but when the second heart sound is distinct and the first muffled or barely audible, some intrinsic myocardial change is most likely the cause. In forty-nine patients, the first heart sound was considered to be diminished in intensity, while in the remaining fifty-four it was not diminished. In the group of cases with cardiac infarction to be discussed below, this feature of the physical examination was rather important. In four instances a distinct gallop rhythm was heard.

The signs of edema in various parts of the body were striking by their absence. In only thirteen cases was there any pitting edema of the legs, and in most of them it was very slight. The liver was palpable in seventeen cases, but with a very few exceptions there was no tenderness, and the edge descended only from 1 to 2 cm. below the right costal border. Râles were often found at the bases of the lungs. There were thirty-one instances in which râles were present. It is evident that not all of the patients actually had congestion from an impaired circulation, as in some there was an associated bronchitis.

ELECTROCARDIOGRAPHIC OBSERVATIONS

Recently there appeared a lengthy study of the electrocardiographic changes accompaning angina pectoris, by Willius.[5] In general, he showed that various abnormalities in the form of the electrical complex might occur. From the point of view of aiding in the diagnosis of angina pectoris, most of the changes that were observed do not help, as they occur in other persons who do not have angina. Much more study concerning the significance of changes in the Q-R-S complex (the initial ventricular complex) and the form and direction of the T wave (the final ventricular deflection) will be needed before any conclusions can be made that are based on secure evidence. There are, however, several points that at present seem suggestive and helpful. A distinct spreading of the Q-R-S complex was found in eleven patients of this series. It is generally accepted that this indicates a defective conduction of impulses through the musculature of the ventricles, and is commonly found in chronic myocarditis. A second type of change in the electrocardiograms is a marked diminution in the height of the curves in all leads. This occurred in two instances, and both patients died several days after the tracings were taken. The diagnosis of both of these patients was infarction of the heart from coronary occlusion. One of the two was examined postmortem, and the diagnosis was confirmed. A large number of the patients showed electrocardiographic preponderant hypertrophy of the left ventricle, and many showed decided inversion of the T wave in one or more leads. It is premature to attach too great importance to inversion of the T wave, as it is observed in other types of patients, and yet some of the curves make one strongly suspect myocardial or coronary disease. Finally, there are a number of patients who show

4. Robinson, G. C., and Herrmann, G. R.: Paroxysmal Tachycardia of Ventricular Origin and Its Relation to Coronary Occlusion, Heart 8: 59 (Feb.) 1921.

5. Willius, F. A.: Angina Pectoris: An Electrocardiographic Study, Arch. Int. Med. 27: 192 (Feb.) 1921.

essentially normal tracings or who show only minor changes. It is evident that conclusions from electrocardiograms must be made with caution. Those abnormalities which indicate myocardial disturbances may throw enough weight in the balance to decide a puzzling diagnosis, and it is quite likely that in the near future more accurate data will be available for clinical purposes.

OBSERVATIONS ON THE VITAL CAPACITY OF THE LUNGS

In recent years the vital capacity of the lungs (the greatest amount of air that can be expired after a full inspiration) has been used as a guide to the progress of patients with heart disease. Peabody and Wentworth [6] have found this to be more or less diminished in heart disease, and also that in the same patient with an improvement in the circulation, as a result of treatment, the vital capacity of the lungs is increased. Similar determinations were made in fifteen of the patients in this series, but the standards used in Peabody's work could not be used for comparative purposes. The vital capacity diminishes even in normal persons with advancing years; and since the patients

VITAL CAPACITY OF THE LUNGS IN ANGINA PECTORIS*

Case	Sex†	Age, Yrs.	Ht., Cm.	Wt., Kg.	Surface Area Square Meters	Normal Vital Capacity, C.c.	Actual Vital Capacity	Percentage of Normal
1. S. C.	♂	64	164	65.7	1.73	4,330	3,200	74
2. B. B.	♂	63	162	70.3	1.77	4,430	3,150	71
3. A. R.	♂	63	160	56.8	1.50	3,980	3,200	81
4. C. H. F. .	♂	61	170	91.6	2.03	5,040	3,500	69
5. M. G.	♂	56	165	63.5	1.70	4,250	3,000	71
6. M. S.	♂	55	164	74.0	1.82	4,550	1,750	38
7. C. J. S. ..	♂	54	152	65.3	1.57	3,930	1,900	48
8. M. C.	♂	52	160	71.6	1.75	4,375	2,900	61
9. S. K. G. ..	♂	45	170	81.6	1.93	4,825	3,375	70
10. H. A. B.	♂	23	187	64.0	1.87	4,675	1,550 2,150 3,100	33 46 66
11. E. L. S. ..	♀	62	168	71.6	1.80	3,600	2,000	56
12. E. S.	♀	57	168	77.2	1.86	3,720	2,500	67
13. M. F. S. .	♀	57	156	81.0	1.80	3,600	1,300	36
14. B. B.	♀	52	158	68.0	1.72	3,440	2,200	64
15. B. E. B. .	♀	45	170	83.6	1.95	3,900	1,450	37

* Some of these observations were made by Dr. J. H. Pratt of Boston.
† In this column, ♂ denotes male, and ♀ female.

we are considering are a great deal older than those used in previous standards, no accurate figures could be deduced. This will be impossible until a large series of normal elderly persons are studied and their vital capacity determined. The accompanying table gives the figures of fifteen cases in which observations were made. The percentage of normal was figured according to West's [7] method, the surface area first being determined, and the result being compared with his standards, which were made on younger persons. In general, the vital capacity was diminished, but probably not as much as the figures would indicate if we could bring to bear the age factor. An interesting feature is that the vital capacity did not increase much, if at all, under treatment in the few that were followed. The only patient who showed a decided rise in the vital capacity had rheumatic valvular disease. This would indicate that only when there is the congestive type of cardiac failure accompanying angina pectoris is much increase in the vital capacity to be expected, even when the patient improves.

6. Peabody, F. W., and Wentworth, J. A.: Clinical Studies on the Respiration, IV, The Vital Capacity of the Lungs and Its Relation to Dyspnea, Arch. Int. Med. **20**: 443 (Sept.) 1917.
7. West, H. F.: Clinical Studies on the Respiration, VI, A Comparison of Various Standards for the Normal Vital Capacity of the Lungs, Arch. Int. Med. **25**: 306 (March) 1920.

INFARCTION OF THE HEART IN RELATION TO ANGINA PECTORIS

One feature of this study remains to be considered, and this concerns itself with the importance of infarction of the heart in relation to angina pectoris. Sir Clifford Allbutt has for a long time taught that angina is always due to an aortitis and has nothing to do with the heart itself. The other more common view is that it is due to coronary disease. The outstanding fact that impresses one who studies the heart in the necropsy room is that almost every patient with angina has more or less recent infarction of the heart due to coronary closure. It seems to me that although an aortitis may well be the underlying cause of the attacks of pain, the prognosis depends on the condition of the coronary arteries. In other words, patients with angina in the great majority of instances live until a coronary artery becomes occluded. Occasionally, even after such an accident occurs, recovery takes place and the patient subsequently succumbs to another infarction. It therefore becomes imperative in any given attack of angina to try to decide whether there has been a closure of a coronary vessel.

Recently J. T. Wearn [8] has studied all the cases of cardiac infarction that came to necropsy at the Peter Bent Brigham Hospital, many of which I had the opportunity of seeing during life. His observations contain many points of practical importance. The attacks of constriction and pain that are associated with cardiac infarction are likely to last much longer than the ordinary attacks of angina. They may continue for many hours, and even a week or two. The picture is that of a patient in collapse. The pain is not likely to be relieved by nitrites, and even morphin may give only little relief. The pulse becomes small and thready, and the blood pressure falls quite markedly. Frequently the liver enlarges and may become tender. There are almost always râles at the bases of both lungs. Very commonly the temperature becomes elevated to 100 or 102, and an appreciable leukocytosis even as high as from 20,000 to 30,000 may develop. The patient can lie flat in bed and yet complain of difficulty of breathing. On rare occasions there is an icteric tint to the sclerae. Death is not likely to occur at the instant of coronary closure but rather a variable time afterward—from a few days to a week or two. In some cases the infarcted area of heart muscle eventually ruptures and the end comes suddenly, even when the patient may seem to be doing favorably. In other instances there is no rupture of the heart, and death comes more gradually, with signs of marked asthenia. Rarely the infarct heals and recovery takes place.

There is a group of cases of angina that includes some of those with cardiac infarction, in which the symptoms are practically all abdominal. Some years ago Tranter and I [8] called attention to two such cases that resembled acute surgical abdominal conditions. There is little doubt that some patients are operated on for gallstones, gastric ulcer, acute pancreatitis, etc., who are really suffering from coronary disease. The difficulty in diagnosis becomes great when the findings are severe abdominal pain, spasm, tenderness in the upper abdomen, vomiting, collapse, fever and leukocytosis. If a patient is known to have had an elevated blood pressure and is found to have a normal or sub-

8. Wearn, J. T.: Coronary Thrombosis with Infarction of the Heart, Am. J. M. Sc., to be published.

normal blood pressure, cardiac infarction must be seriously considered. The quality of the heart sounds at the apex may help in differentiating the cardiac from the abdominal condition, for in attacks of coronary disease, the heart sounds are likely to become quite faint, particularly the first heart sound. Occasionally a pericardial friction sound develops. I have seen several patients in whom confusion between acute surgical conditions and angina pectoris arose. One had recently been operated on for gallstones, and none were found; a surgeon was called for another patient to operate for an acute intestinal obstruction. The surgeon hesitated and the patient recovered his customary health, but died suddenly a few months later. This condition will probably explain some of the negative laparotomies performed on middle aged or elderly persons.

SUMMARY

A clinical study of 103 cases of angina pectoris was made, on which were based the following observations:

The disease is much more common in males than in females, while vascular hypertension, which plays an important rôle in the etiology of the disease is, on the contrary, more common in women. I believe that physical work may account for this discrepancy. The typical patient with angina is a strong, muscular and well set person. The disease seems to be comparatively rare in the underdeveloped, poorly nourished and weak.

In this series, syphilis was an etiologic factor in only six patients. This would indicate that the importance of syphilis as a cause of angina pectoris has been overemphasized. There were seven who had diabetes mellitus, and five who had gout. Organic valvular disease was rarely found associated with angina pectoris. Two patients had typical mitral stenosis, and there were two young patients with rheumatic disease of the aortic valves.

The average systolic blood pressure was 160.6 mm., and the diastolic, 95.0 mm. The variations from the mean systolic pressure extended from 80 to 260 mm. About two thirds were between 140 and 200 mm. Observations on the blood pressure in a few cases were made in relation to the onset of the attack of angina and the administration of nitroglycerin. Two patients showed a marked increase with the onset of the attack, and then a fall as the attack subsided after the nitroglycerin had been given. In a third the change was not significant either as the attack developed or as it subsided under treatment.

Examination of the heart in many cases was negative. Of these 103 patients, forty-seven showed no murmurs, forty-nine had a systolic murmur at the apex or base, and seven had a diastolic murmur. Of the latter group, two had definite and one probable syphilitic aortitis, three had rheumatic aortic insufficiency, and one had mitral and tricuspid stenosis. The heart was generally found hypertrophied on ordinary examination or by orthodiagraphy or electrocardiography. An occasional patient showed no hypertrophy even after the most careful search. The dominant rhythm of the heart in angina pectoris was regular, although there were occasional extrasystoles. Only one out of 103 showed persistent auricular fibrillation. This is particularly striking, because during the same period of time persistent auricular fibrillation was observed in about 200 other patients suffering from chronic myocarditis, who in general were of the same age as those with angina. There therefore seems to be a distinct incompatibility between angina pectoris and auricular fibrillation. Patients with auricular fibrillation are not likely to have or to develop angina pectoris; and, vice versa, those suffering from angina do not develop auricular fibrillation.

The quality and loudness of the heart sounds are of practical importance in angina, especially the first heart sound at the apex. The diminution of the intensity of the apical first sound may be of aid in diagnosis and prognosis. Edema of the limbs and swelling of the liver are rare, but congestive râles at the bases of the lungs are common, especially in those patients with cardiac infarction.

The electrocardiograms were occasionally normal in appearance, and frequently showed only slight alterations. There was evidence of left ventricular preponderant hypertrophy in the great majority of cases, and many had inverted T waves in one or more leads. Eleven showed a distinct spreading of the Q-R-S complex, and in two fatal cases the amplitude of all curves was greatly diminished.

The vital capacity of the lungs was determined in fifteen patients. As there are no satisfactory standards of elderly persons with which to compare, no final conclusions could be made. Using the customary standards that apply to younger patients, the figures obtained in this study showed a decrease of varying extent in all instances. They did not show an increase in the vital capacity when they improved under treatment as did other cardiac patients, except in the one instance in which there was an added factor of cardiac failure with congestion.

It is important to distinguish attacks of cardiac infarction from those of ordinary angina pectoris, for where the prognosis of the former is generally only days, that of the latter may be years. The patient having cardiac infarction shows the picture of shock and is cyanosed; the pain may last many days, and is not relieved by nitrites, or even at times by morphin; the pulse is likely to be a little rapid and small; the systolic pressure falls sometimes as low as 90 or 80 mm.; râles develop at the bases of the lungs, and the liver may become engorged and tender. A leukocytosis of 20,000 or more frequently develops. Occasionally the violent pain is localized in the upper abdomen, and there may be nausea, vomiting and marked rigidity of the muscles in the epigastrium. There are therefore some patients with cardiac infarction who present the typical picture of an acute surgical abdominal condition.

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An Accidental Death Every Six Minutes.—Seventy-six thousand accidental deaths—a life every six minutes—is the toll paid by Careless America during 1920, according to the report of the National Safety Council presented at the Eleventh Annual Safety Congress, which opened in Detroit, August 28. The 1920 toll of accidents represents the total population of the state of Nevada, and while it is a decrease of 3,300 over 1911, it is only 400 less than the 1919 total. The automobile fatality frequency for 1920 was 30 deaths a day, a total of 11,000 for the year. People died from falling accidents of all kinds at the rate of thirty-four a day. Burns claimed twenty-two lives a day, a total for the year of 8,088. Railroad accidents showed no decline as there were 7,769 such deaths. Over twice as many men died accidentally as did women.

THE NORMAL SELLA

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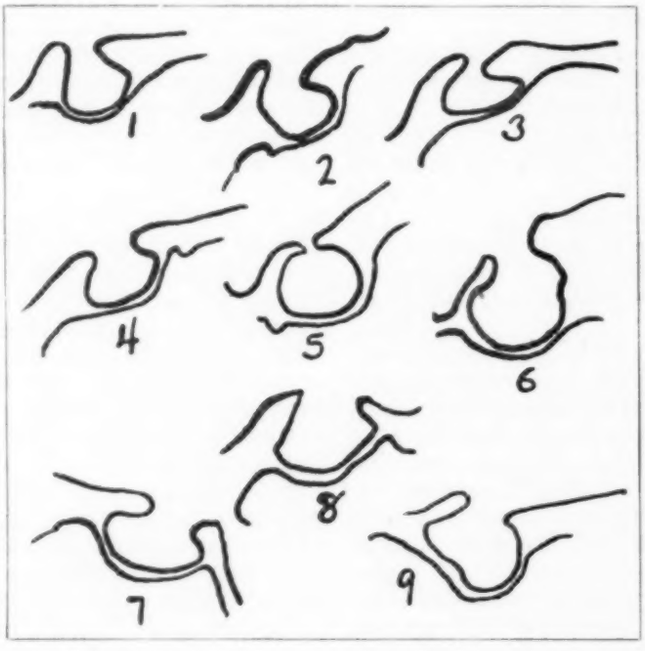
Numerous case reports and articles dealing with endocrine disorders have recently mentioned the size and shape of the sella turcica as shown roentgenographically with the inference that conclusions might fairly be drawn as to the function of the pituitary through some departure from the normal in the size or shape of the sella. The type of reference to which I refer is one which deals simply with variations in contour, and does not depend for the diagnosis of a pathologic condition on the presence of erosion, or manifest encroachment of the contents of the sella on adjacent structures. It is doubtless natural that students of endocrinology should incline to enthusiasm with regard to this field of medical research, and should hope to obtain from roentgenography of the sella some information relative to the functional capacity of the pituitary, since the only means of obtaining any information in regard to the anatomic peculiarities of the gland in the living subject is through examination of the bony chamber in which it is housed.

It is evident that if an abnormal finding is to be of value in diagnosis, we must first be able to establish the existence of a definite normal; and we must further be able to determine with a considerable degree of accuracy where the normal leaves off and the abnormal begins. Since the sella is, as a rule, examined roentgenographically only when some degree or type of endocrine disturbance is quite definitely suspected from the symptoms, it occurred to me that possibly a fairly extensive series of examinations of normal subjects showing no endocrine stigmas at all might throw light on the range of normal findings and should, in all likelihood, permit me to establish for my own work a set of normal limit measurements.

I have therefore taken roentgenograms of the sella turcica in 100 consecutive cases coming up for examination for all types of disease, excluding persons who were clearly suffering from endocrine disturbance of any sort, and also excluding persons of clearly marked pituitary type, even though they were without symptoms referable to the pituitary. The ages ranged from 18 to 68; 55 per cent. were women, and the weight of the different subjects varied from 84 to 230 pounds (from 38 to 104 kg.).



Tracings from roentgenograms of sella turcica in nine normal persons:

Subject	Weight		Size of Sella	
	Pounds	Kilograms	Width	Depth
1. Man, aged 58.....	180	81.6	8 mm.	10 mm.
2. Man, aged 61.....	163	73.9	9 mm.	9 mm.
3. Woman, aged 24....	130	58.9	10 mm.	7 mm.
4. Woman, aged 20....	89	40.3	10 mm.	8 mm.
5. Woman, aged 25....	160	72.5	11 mm.	11 mm.
6. Woman, aged 45....	105	47.6	12 mm.	14 mm.
7. Woman, aged 26....	120	54.4	13 mm.	9 mm.
8. Woman, aged 26....	90	40.8	13 mm.	10 mm.
9. Woman, aged 43....	140	63.5	13 mm.	11 mm.

The technic used is of interest only in determining the amount of distortion or magnification which would occur in films taken for measurement purposes when the tube film distance is less than 6 or 7 feet. The films studied were made with a uniform technic employing a cylindric cone 3 inches in diameter, and the tube film distance was in all cases 24 inches. In order to facilitate measurement and to aid us in grouping the pictures as to type if such a proceeding proved feasible, tracings were made from the original film on a square of transparent tracing cloth, and the measurements and comparisons were made with these tracings rather than with the original films.

The width of the sella was measured at the widest point, and the depth was measured by drawing a line from the superior surfaces of the clinoid processes and dropping a perpendicular from this line to the deepest portion of the sellar outline. In width, the measurements varied from 6 to 19 mm. In depth, the variation was between 3 and 12 mm. I was unable to separate, with regard to contour, the number of distinct types that are sometimes described, the various types merging into one another without a definite dividing line. There was, however, a small group of ten of the so-called closed type in which the clinoid processes nearly met above. Of these, eight were in women and two in men, as compared with the sex percentage for the whole series of 45 per cent. male and 55 per cent. female; the extremes of age in this group were 25 and 66. Twenty-seven of the whole number of sellas examined were unusually small, and of these sixteen were in women and eleven in men; the incidence with regard to sex in this series was about the same as in the whole group. The age extremes in this division were 18 and 64. Seventeen were unusually large, and of these ten were in men and seven in women, the age extremes being 36 and 68. Forty-six of the whole number approximated the average in size and contour, and constituted the type which we have been accustomed to read as normal sellas. Of these, twenty-four were in women and twenty in men. It will be seen that the sex percentage of the whole group was fairly closely maintained in the unusually small division and in the average division, while this percentage was deviated from in the closed group and in the unusually large group, the men predominating in the last group, as might perhaps have been expected in conformity with general bony development. However, I was interested to observe that a considerable number

of quite small persons had unusually large sellas, and that the reverse also occasionally occurred.

I feel justified in concluding from this rather small series that the sella turcica in the normal person may vary both in size and in contour within very wide limits; that the average sella, which has usually been interpreted from the roentgen-ray findings as being the normal type, constitutes in the neighborhood of 50 per cent. of the general run of cases, and that wide variations from the average are not necessarily accompanied by any indications of pituitary malfunction or disease. I further feel that the only definitely and positively abnormal roentgenographic finding is clear evidence of erosion of the bony structure.

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VACCINIA OF THE EYELIDS BY HOMO-INOCULATION *

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Eighty-odd cases of vaccinia of the eyelids have been recorded in the literature. Of these, however, only about 25 per cent. were due to vaccinated persons inoculating their own eyes, the remainder being due to vaccinators, mothers, nurse-girls and others infecting their eyes from the vaccination vesicle of some one under their care. It is on account of the infrequency of the cases brought about by homo-inoculation that we report the one described herewith.

Incidentally, we wish to call attention to several associated facts. In addition to the cases mentioned above, eight instances have been reported in which the cornea was accidentally the primary seat of inoculation. In eighty-odd cases of palpebral vaccinia, the cornea was involved by extension in only about 10 per cent. Several cases of a primary "vaccinal conjunctivitis" have been reported, but it is difficult to gain from the literature a clear idea as to the approximate frequency of primary vaccination of the conjunctiva. Of the ninety-odd cases in which vaccine virus was inoculated into the eye or eyelid, only two cases were due to the inadvertence of physicians. Three or more were inoculated by midwives. Of the remainder, about two thirds were traceable to mothers or nurse-girls. Thus, the class of cases brought about by the cross inoculation (hetero-inoculation) of vaccine matter from the arm or leg of one person to the eye of another occurs twenty times oftener in adults than in children, 90 per cent. of the cases being in women, on account of vaccinated children being mostly in their care. On the other hand, the class of cases brought about by homo-inoculation is found almost without exception in young children. In the latter class, sex obviously plays no etiologic rôle.

The clinical appearance of vaccinia is not quite the same on the eyelids as it is when on dry skin surfaces. The macerating effect of continuous lacrimation causes the vaccine lesion early to lose its vesiculated epidermis. During the early days of the vesicle, that is, before the vacuolated epidermis detaches, the lesion has a more yellowish or creamy tinge than is ordinarily noticed when the lesion is on other skin surfaces. After the epidermis has detached, the base does not become covered with a thick, tenacious, golden-brown crust, but rather has a diphtheritic appearance. In time, following the subsidence of lacrimation, the ulcerated base is covered with a thin, glazed, reddish-brown crust.

When the vaccine vesicle on the lid is a transplant from a primary vesicle on an arm or other part of the body, the secondary vesicle on the lid will undergo a quicker, more inflammatory but more superficial and less destructive course, than it would were it a primary inoculation. We may approximately correlate (inversely) the degree of tissue destruction with the time that elapses between the primary vaccination and the secondary homo-inoculation. The longer the time between the two, the less will be the tissue destruction. This fact is apparently dependent on the law first announced by Bryce. This law refers to the rate of growth of the secondary vesicles. The latter grow more rapidly than the initial vesicle, and the rapidity of their growth is in direct ratio with the length of time that has elapsed between the primary and the secondary inoculations. As a consequence, the primary and secondary vesicles reach maturity at the same time.

The prognosis of secondary vaccinia of the eyelids is usually surprisingly good, considering the degree of scarring caused by primary vaccinia of the skin. However, severe complications may arise in cases in which the conjunctiva or cornea are involved by secondary extension. The loss of an eye has been noted many times, and corneal opacities that interfered markedly with vision were described by Morax, Snydacker, Schmitz, Knaggs and Black. The resulting deformity of the lid or lids may consist only of a small pale area of thin, soft scar with a loss of few or many of the cilia, or it may consist of marked adhesions binding one or both lids to the globe. Marx reported a case of symblepharon, and both he and Thompson presented cases of ankyloblepharon.

We believe that physicians should habitually instruct vaccinated persons as to the ocular accidents that may accrue from the touching of vaccine lymph or vesicle.

REPORT OF CASE

V. B., a girl, born, Sept. 5, 1916, whose history was obtained from the parents, was vaccinated for the first time, Nov. 15, 1921, at 8:30 p. m. The vaccine virus, a stock commercial product, was inoculated on the outer aspect of the left thigh at about the juncture of the upper and middle thirds. The wound was covered with sterile gauze held in place with *short* adhesive strips. One or more of the latter would frequently detach from the skin, thus permitting the patient to handle the dressing and attempt to press the ends of the adhesive strips into lasting contact with the skin. The fully developed vesicle had a prolongation from its anterior border suggesting that, at an early date, it had been rather deeply scratched into. That the vaccination would be successful was first noticeable a few hours short of four full days after the time of vaccination. The primary vesicle underwent a typical course of development. The largest size that it attained was ⅝ by ⅞ inches (16 by 22 mm.); it had one large and two small indentations. The areola measured 2¾ inches (7 cm.) in diameter.

The disturbance about the eyelids was first noticed about 3:30 p. m., November 22. The patient then drew her mother's attention to the fact that a "stye" was developing on the inner end of the upper left eyelid. What was then thought to be a "stye" consisted, when first seen, of a small "pimple, tipped with a yellow head." The vesicopapule grew so rapidly that it trebled the diameter of its base within two hours. It did not, however, increase in height. By 8:30 p. m. of the same day, the physician who vaccinated the child was able definitely

* Read before the Section on Ophthalmology at the Seventy-Third Annual Session of the American Medical Association, St. Louis, May, 1922.

to recognize its vaccinal origin. The erythema (areola) about the vesicle spread rapidly and involved both eyelids during the night. The second palpebral vesicle (on the lower lid) was first noticed early on the morning of November 24. Chemosis was not noticed until the morning of November 25; it then developed rapidly. The patient was first seen by one of us (J. M. B.) on the afternoon of November 24, and the condition was diagnosed as vaccinia. Dr. Joseph Grindon and the co-author were called in consultation on the morning of November 25. It was decided to let the secondary vesicles proceed undisturbed. The conjunctival sac and lids were treated with instillations of 2 per cent. solution of mercurochrome-220 soluble, and the mother was instructed to apply cold compresses for twenty-minute periods frequently throughout the day.

Throughout the evenings of November 24 and 25, the patient had an axillary temperature of 100 (determined by the mother). On the evenings of November 25 and 26 the child perspired freely; no internal drugs had been administered. No headache, backache or other aches were noticed. The appetite remained normal and the child continued quite lively. During the week before vaccination, and the two weeks following, the patient had a laryngotracheitis. The vaccination had no noticeable effect on the disease of the respiratory tract.

The palpebral vesicles were slightly larger on the morning of November 27, and were then accompanied by six satellite vesicles. Preauricular adenopathy was then detected for the first time; it was at no time painful on mastication. November 27 (10:30 a. m.), colored sketches were made. Mercurochrome-220 soluble in 2 per cent. solution was instilled into the conjunctival sac twice daily from November 25 to 29, and once daily afterward until December 4; during this time the mother frequently instilled a solution of the same strength into the child's eye. Chemosis had commenced to subside by the morning of November 30. Crusts were present by the next day. They detached, December 3, leaving very shallow, healthy erosions. The eyelashes involved in the vaccinal inoculations detached from their follicles and were removed with the crusts.

Judging from present indications, there will be no scarring or disfigurement, except for a small, translucent, stellate scar over the inner eighth of the upper palpebral margin. Immediately above the scar may be seen a group of sebaceous follicles that are now more prominent than they were before the development of the vaccine vesicle on the lid. Some of the cilia of the affected areas have lately reformed.

4500 Olive Street.

ABSTRACT OF DISCUSSION

DR. GEORGE W. JEAN, Santa Barbara, Calif.: I wish to refer to the typical keratitis which results when the cornea is inoculated with vaccine virus, or from a vaccine ulcer of the lid. Otto Schirmer, in 1891, first described this corneal condition and called it keratitis postvaccinolosa. This disease and keratitis disciformis, later described by Fuchs, are clinically identical—deep disk-shaped opacity with concentric rings, anesthetic cornea, permanent opacity, etc. Schirmer inoculated guinea-pigs with vaccine virus, and in one case he inoculated a guinea-pig with scrapings from the cornea of a patient affected with keratitis postvaccinolosa, and in all these cases a typical disciformis keratitis resulted. He thought that Fuchs had "stolen his thunder" in renaming as keratitis disciformis his keratitis postvaccinolosa.

Percentage of Mistaken Diagnoses.—McCrae and Funk in checking the correctness of their diagnosis in cases admitted to their wards in Jefferson Hospital from the General Medical Clinic and from the Tuberculosis Dispensary, as well as from members of the profession, found in 1,200 consecutive admissions with a diagnosis of advanced pulmonary tuberculosis that seventy-two, or 6 per cent., were nontuberculous. One hundred and thirty-four cases came to necropsy, revealing seven, or 5.2 per cent., nontuberculous, a figure corresponding very nearly to the preceding one, confirming the correctness of their own diagnoses.—Matson, *Northwest Med.*, July, 1922.

THE COEFFICIENT OF THERMAL CONDUCTIVITY OF EYE AND ORBIT

MEASURED WITH WARM APPLICATIONS *

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This paper is a continuation of one [1] which was presented at the meeting of the Section on Ophthalmology of the American Medical Association at New Orleans in April, 1920. As the terms cold, warmth and heat are relative, in this connection I shall consider that cold means any low temperature up to about 15 C.; but it is considered zero unless otherwise specified. Warmth is a more generic term, but, when limited, means a range from about 15 to 30 C., and heat from 30 C. upward.

In the present statement concerning the effect of warm applications it is well to recall a few points, but the repetitions shall be as few and brief as possible. It will be remembered that the term "coefficient" means practically the rapidity at which a given degree of warmth, applied over a given area, penetrates the eye and orbit, and especially the depth to which that warmth extends. The opportunity offered for attempting a solution of that problem was quite unusual; but as that and the method adopted were described in the first article, it will suffice here to state briefly that a young woman developed a tumor in the orbit, which, after operation, left for many months a fistula, nearly 3 cm. deep, extending from the vicinity of the lacrimal gland backward behind the globe. Into that fistula it was possible to introduce one terminal of a pair of thermocouples and thus measure the decrease in temperature behind the eye when ice was applied to the lids. From the data thus obtained graphs were made which showed, in general, that the abstraction of heat produced a gradual reduction of temperature, so that in about sixteen to eighteen minutes there resulted a fall of nearly 3 degrees centigrade at a distance of approximately 2.7 cm. beneath the lid. When the ice was removed it required about an equal time for the circulation to reestablish the former temperature.

Although these measurements of temperature with thermocouples were by no means new, they constituted apparently the first efforts to determine with them the effects of cold on the eye and orbit. For that reason attention was called to the clinical value of the method, and how it might be employed to measure the effects of cold or warm applications in the vicinity of natural orifices into which one of the thermocouples could be introduced, or where openings are made by accident or by operation.

Meanwhile, similar studies were made by Macleod, professor of physiology, and his associate, Dr. Taylor, lecturer in physiology at the University of Toronto. Their experiments [2] were made on rabbits. Openings were made at different parts of the animals' bodies, one of the couples introduced, and the results read on the galvanometer, as described also in my first communication two years ago. It was gratifying to find that, with allowance for the probable differences between

* Read before the Section on Ophthalmology at the Seventy-Third Annual Session of the American Medical Association, St. Louis, May, 1922.

1. Howe, Lucien: On the Coefficient of Thermal Conductivity of the Eye and Orbit Measured with Cold Applications, Tr. Sect. Ophth. A. M. A. 1920, p. 134.

2. Macleod, J. J. R., and Taylor, N. B.: Lancet 2:70 (July 9) 1921.

the human and the animal structures, and for necessary differences of technic, the results seem to accord more closely than might have been expected.[3]

The plan adopted for making measurements of the effects of warm applications on the eye of a patient presented two factors: (1) the source of the warmth and (2) the method of its use. The first factor was quite complicated. For this it was necessary that:

(*a*) The appliance should have the degree of warmth equally distributed over its surface.

(*b*) It should be capable of variations of temperature which could be easily controlled.

(*c*) It should maintain a constant temperature, if desired.

(*d*) It should be adaptable to the shape of the lids.

If, now, we measure by this standard the means of applying heat with water bottles, coils of rubber hose, the so-called Japanese punk box or similar methods, they must all be promptly discarded. The most reliable method was evidently based on the principle of heating pads. The so-called "mastoid pad" was too large and heavy to fit over the lids, and exact measurements showed that the warmth was greater near the center than at the periphery of the pad. That was because in such pads a soft and flexible "core" is wound with a fine wire and then coiled from the center outward, the resistance offered producing the heat.

To obviate this difficulty, I had a special pad made, the entire length of the core being covered with resistance German silver wire 18 per cent. No. 32 single silk covered. Over the inner turns of this core there were only twelve turns to the inch, but the outer turns of the core had sixteen to the inch. The area covered was about 9.5 square centimeters. In this way the temperature could be kept practically constant at any point. The use of this pad and the readings from the galvanometer were in every way similar to what has been already described in connection with measurements of the effect of cold applications. One point, however, should be mentioned: the measurement of the temperature of the pad itself. When studying the effects of cold, melting ice was applied to the lids, and we were sure of a temperature of zero at that point. But when studying the effects of warmth it was necessary to find first just what the temperature was on the lids, in order to have a point for comparison. Several attempts were made to attach a thermometer to the forehead and hold its flattened bulb underneath the pad. It was found best to have another assistant steady this instrument in its proper position.

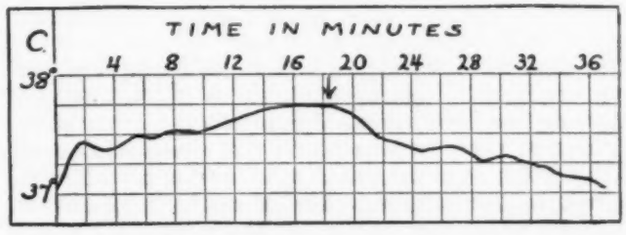
The results can be stated briefly, if the data are arranged in groups, similar to those which related to measurements of the effects of cold. Thus we find that:

1. When heat was applied over the eye of a dead hog, and one of a pair of thermocouples was passed into the orbit the gradual transmission of the heat showed itself in figures which, when plotted, gave an upward almost perfect gradient, the rapidity of the incline being in proportion to the intensity of the heat. This means, of course, simply the gradual warming of dead tissue. This result and the one which follows are mentioned simply for completeness and to show the similarity of the effects of heat with those of cold.

2. In living tissues, the rate of change of temperature and the depth to which that change extended was practically in proportion to the degree of warmth applied externally. Thus, in the earlier measurements of the effects of cold, a temperature of 15 or 20, applied over the lids, produced little or no effect on the thermocouple when in the depth of the fistula. When, however, the junction at the end of the couple was partly withdrawn to a point only 1 cm. below the surface, the effect, as shown by the deflection of the galvanometer, was distinctly perceptible. Thus, a series of graphs could be plotted from the data obtained to show the rapidity and depth of changes of temperature under changing conditions. That, however, with the necessary description of details, would have meant too long a digression.

3. Measurements were also made to determine what might be called the limit of endurance of heat for the eye and the orbit. For, if an application at a temperature of about 60 to 65 was made to the lids and retained there, that degree of heat was sufficient to produce discomfort or even pain, lacrimation, and injection of the conjunctival and ciliary vessels. After a time the discomfort reached a point which may be called the limit of endurance.

4. The heat of maximum efficiency was the next point to be determined. As the galvanometer showed that moderate degrees of heat or warmth affected the underlying tissues only slowly and superficially, and as



Effect of even temperature pad at 54 C. on the lids; the couple 2.7 cm. in the orbit. At point indicated by the arrow, the pad was removed.

degrees of heat approaching the limit of endurance were uncomfortable and probably also disadvantageous, it was therefore eminently desirable to ascertain the highest temperature which could be borne with comfort and safety and still have its corresponding effects on the underlying tissues—namely, on the eye and orbit.

Of course, degrees of comfort could not be expressed in figures. But a number of trials under different circumstances showed that applications of the pad at about 52 to 56 degrees could be borne without much inconvenience. As it had been found that the efficiency of applications of heat and of cold was, in general, in proportion to the extreme degree of each, respectively, it seemed proper to consider about 52 to 56 C. as the heat of maximum efficiency. This is about the temperature at which our applications of heat should be in order to obtain a rise of temperature in the globe or orbit.

The validity of this statement can be shown best by plotting the data obtained in one of the series of measurements made on the patient referred to, Mr. Theodore Klein assisting. From this chart it is seen that when one of a pair of thermocouples was passed into the orbit a distance of 2.7 cm. and the pad at 54 C. was applied to the outside of the lids, the temperature in the depth of the orbit gradually rose, in from 16 to 20 minutes, to nearly 38 C. Then, when the source of heat on the lids was removed, the temperature in the depth of the orbit gradually fell until, in about an equal time, it returned to 37 C.

3. In Penetration of the Tissues by Heat, editorial, J. A. M. A. 78: 351 (Feb. 4) 1922, the clinical importance of this line of study is indicated.

SUMMARY AND CONCLUSIONS

1. In any such measurements it is necessary to have a source of heat which can be equally distributed over a given surface, capable of variations, of maintaining the same temperature if desired, and, finally, the applicator must be in a form easily adaptable to the lids. These conditions are apparently fulfilled by the heating pad devised for that purpose.

2. Application of heat from 60 C. to about 65 C. or higher to the lids caused discomfort, pain, lacrimation and some injection of the conjunctival and ciliary vessels. That represents the limit of endurance.

3. It was found that the application of heat at about 52 to 56 C. affected the underlying tissues the maximum amount, and might therefore be considered the degree of heat of maximum efficiency.

4. When all necessary precautions were observed, it was found that if one of a pair of thermocouples was passed into the tissues of the orbit a distance of 2.7 cm., and the pad at 58 C. was applied to the outside of the lids, the temperature in the depth of the orbit gradually rose, in from sixteen to twenty minutes, to nearly 38 C. If the source of heat on the lids was removed, the temperature in the depth of the orbit gradually fell until, in about an equal time, it returned to practically 37 C.

5. This brings us finally to the question with which we started, namely: What is the coefficient of thermal conductivity as measured with warm applications? Is it the same as the coefficient which was found from the data obtained by making applications of melting ice? Omitting here the tedious details of calculation given in the first paper, it was found that the coefficient or "K" = 0.007. On the other hand, a number of measurements gave an average for the conductivity of heat not much more than half as great as for the conductivity of cold.

The reason is evident. As the body temperature is everywhere controlled by the circulation, as cold tends to contract the capillaries and heat to dilate them, the effects of zero temperature are more marked than those near the temperature of even maximum heat efficiency.

6. Both cold and warm applications in reality change the temperature of underlying tissue only slowly and to a less degree than is generally supposed. Warm applications are undoubtedly useful when increased vascularity is desired especially with a view to hasten suppuration. They are often agreeable to the patient, and their psychic effect cannot be overlooked; but otherwise their value is doubtful.

7. The most important result of this entire study is, as already mentioned, that the unique condition presented by this woman made it possible for the first time to obtain anything like a numerical expression of the coefficient of conductivity of the eye and orbit. It was a condition which seemed to warrant the investigation in order to obtain the few data available concerning a problem well known but heretofore entirely unsolved.

ABSTRACT OF DISCUSSION

DR. WILLIAM E. SHAHAN, St. Louis: In 1913, Dr. Howe introduced to American ophthalmology the use of the thermocouple for the accurate measurement of temperature within small spaces. This has resulted in elaborating and standardizing thermotherapeutic methods of direct and definite clinical importance. I wish to emphasize as strongly as possible the fact that the thermometer or thermocouple alone will not indicate the physiologic, pathologic or therapeutic effects of heat on any tissue. It is absolutely necessary to take into consideration the conductivity of the material used for transmitting the heat into the tissues. The thermometer indicates the intensity of the heat, the heat potential, so to speak; while the conductivity indicates the amount of heat which flows through the conducting medium into the tissues, the heat amperage. If two precisely similar size masses are selected, one a brass cylinder plated with nickel, and the other a fiber cylinder such as is used for electric insulation, and each is held at 70 C. (158 F.) by a constant temperature instrument built for that purpose, very dissimilar effects will be produced. If the brass cylinder is held at this temperature in contact with a rabbit's ear for one minute the tissues will be destroyed throughout their entire thickness, and a hole will likely result. If the fiber cylinder is held against the rabbit's ear for one minute at the same temperature, no effects beyond a slight transient hyperemia will be produced. The flow of heat, the heat amperage, through the brass is large, and correspondingly large effects are produced, while the flow of heat through the fiber is small and small effects are produced. In Dr. Howe's first set of experiments, pieces of ice were used, and these had a certain definite conductivity, or rate, at which they withdrew heat from the tissues, and a certain coefficient was obtained. In the second set, a heat pad was used, probably composed of wire, rubber and felt, and a different coefficient was obtained. The pad probably had a degree of conductivity about half that of ice, and gave a correspondingly smaller coefficient. So, in any number of investigations in which different conducting materials are used, different heat effects and different degress of heat tolerance will be obtained with the same temperature as shown by the thermometer. The limits of heat tolerance for varying degrees of temperature have been quite definitely established for brass plated with nickel. But the data obtained for this conducting material hold for it only. If silver or glass were substituted, equally definite and equally exact but totally different figures would be obtained.

DR. A. E. PRINCE, Springfield, Ill.: About five years ago I published a treatment for infections of the cornea by the use of a heated ball of copper which for want of a better name was termed the "pasteurizer." This heated egg-shaped mass of copper was held about one fourth of an inch from the ulcer or other focus of infection. The result was to raise the temperature of the germs several degrees, after which they seemed to lose their virulence and the phagocytic action of the tissues of the cornea became able to cope with them, thus arresting the progress of the infection. At the time of the publication of my paper, Dr. William E. Shahan was perfecting the instrument by which a permanent temperature of a desired degree was maintained for an indefinite period. The work of Dr. Howe and Dr. Shahan indicates a degree of scientific accuracy which would throw my contribution entirely into the discard were it not for the fact that its simplicity and inexpensiveness enable any physician, specialist or otherwise, to cope successfully with ulcers of the cornea. The practical application of heat in such a manner and in such a degree as not to injure the tissues of the cornea, while at the same time it is devitalizing the infection, can but add to the value of Dr. Howe's investigation. I wish to offer a method of procedure to further increase the efficiency of this little instrument. The pasteurizer is heated in any kind of a flame. The point is then immersed in water, the audible effect of which is a sizzle on account of the sudden liberation of steam. This is repeated, and the sizzling sound indicates a lower temperature. When no bubbles are produced, the temperature of the heated ball is lower than 212 F. The temperature is tested by applying the ball to the palmar surface of the hand. It should seem hot, but should not burn. It is now ready to apply directly to the ulcer or infected area. This may be done with absolute safety, and, I think, the result will be gratifying. Concerning the application of elevated temperature to the interior of the eye: A patient was suffering from a very painful form of cyclitis; everything failed to give relief from pain. With the idea of increasing the temperature of the interior of the eye a few degrees, I took the coil out of a reflector used for heating a room. I

attached a cord of sufficient length to suspend the coil from the electrolier of the room and leave it hanging on the level of the patient's eye when she sat in a chair. She was directed to bring her eye toward this heated coil while protecting the face with a perforated pasteboard. At the end of thirty minutes her pain was gone. Numerous cases of iritis, cyclitis, gumma and even choroiditis have been relieved by the use of this simple device.

DR. LUCIEN HOWE, Buffalo: It seems evident that my part of this study has been overestimated. It was simply a fortunate opportunity which presented itself; similar opportunities occur more frequently than we realize. An important factor was the pad which we used. With that it was easy to measure the temperature. In regard to the use of heat for killing bacteria, I do not think there is much to be expected as far as treatment is concerned; but apparently these measurements give us some idea, for the first time, of the real effects produced on the temperature when cold or heat is applied over the eye and orbit, and also the idea that the same measurements are applicable to other parts of the body.

RECURRENT HEMORRHAGES INTO THE RETINA AND VITREOUS OF YOUNG PERSONS

A METHOD OF EXAMINATION *

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Nontraumatic recurrent hemorrhages into the retina and vitreous are due to a number of conditions. It is not my desire to discuss all types of intra-ocular hemorrhage, and this paper will be confined to the so-called recurrent hemorrhages of adolescence. It is not a new subject. The literature of recent years has contained a number of case reports, and several papers have already been written on the etiology and pathology of this interesting condition.

In reviewing the literature last year, I was able to compile 110 recorded cases of the disease. The terminology used in describing this peculiar syndrome is confusing, and it is possible that many unindentified cases were overlooked. Regardless of this possibility, there is a paucity of cases on record.

A paper on this subject is timely, because of the small number of reported cases, the lack of uniformity in examination, and the confusion in terminology.

In the short space of seven years, I can recall having seen in my practice, and through the courtesy of my colleagues, seventeen cases of unquestionable recurrent hemorrhage into the retina and vitreous in young persons. The condition is more prevalent than is commonly believed, for it is very probable that many cases are unrecognized and improperly classified. For this reason, we should all attempt to determine the etiologic factors which produce the changes which occur in these eyes. To accomplish this, we must adopt a uniform system for examination, in an attempt to eliminate or establish certain factors as a cause. We should examine each case, as far as is practicable, for every condition (and there are many) which has been advanced as a cause of recurrent hemorrhage into the retina and vitreous.

The following is a proposed method of examination, which covers the data that are necessary in these cases:

Family History.—This should cover diseases of the eye, tuberculosis, hemophilia and gout.

Personal History.—General diseases of childhood, and other illnesses.

Constipation: Its duration, and relation to the ocular hemorrhages. (This was first proposed as a cause by Eales in 1882.)

Epistaxis: Its duration, and whether it discontinued just prior to the first ocular disturbance. (It had been noticed by several observers that epistaxis had occurred frequently but had discontinued just before the first ocular hemorrhage.)

Tuberculosis: Whether the patient has ever had active pulmonary tuberculosis or tuberculosis elsewhere (history of loss of weight, appetite, etc., with night sweats).

Syphilis: History of chancre or secondary manifestations.

Hemophilia: Whether the patient had ever had difficulty stopping hemorrhages following injuries.

Sexual habits.

Menstrual disturbances.

Eye History.—(*a*) Status of eye prior to beginning of recurrent hemorrhages (trauma, inflammation, refraction).

(*b*) Date of first subjective symptoms produced by hemorrhages. (This does not always correspond to the date of the first hemorrhage, because minute hemorrhages frequently occur in the periphery of the fundus without producing symptoms in the eye first involved.)

(*c*) Nature of first eye symptoms, photophobia, lacrimation, loss of vision (degree of loss), pain, etc., and length of time for recovery.

(*d*) Number of recurrences, with distinctive subjective and objective symptoms and duration of each.

(*e*) If the second eye becomes involved, date of the first symptoms.

Examination.—This includes the recording of vision, inspection of the eyes, study of the pupils, taking of ocular tension (fingers), and ophthalmoscopic study.

Prolonged and repeated study of the fundus of the eye is absolutely necessary to obtain an intelligent understanding of the changes which have taken place or are occurring in the case at hand. There are no fundus changes which require more patience and time for examination than these. Each vessel, especially the veins, should be followed from the disk to the extreme periphery of the fundus, and if any changes are found they should be carefully recorded. (I believe that in most cases the earlier changes occur in the peripheral vessels of the fundus, and that the vessels near the disk become involved later.) If bleeding has occurred into the vitreous, the fundus details will be partially or entirely obscured, and the study must be deferred until the vitreous becomes clear.

Both fundi should always be examined carefully at each sitting, even though subjective symptoms are complained of in one eye only. Early involvement of the smaller peripheral vessels is often noted on the supposed good side, and it is from a careful study of the changes in these vessels that a knowledge of the living pathology of this condition will be attained.

The things to be noted with the ophthalmoscope are:

1. The transparency of the media; if opacities are present, their appearance, location, nature, and size. Whether they are fixed or floating should be determined.

2. The vessels. In examining the retinal vessels, we should determine whether it is the arteries or the veins which are chiefly involved. We should note the relative size of the arteries and corresponding veins, and determine whether there are variations in caliber; i. e., constriction and aneurysmal dilatations; and whether the portion of vein peripheral to apparent constriction is larger than the portion proximal to it. In many of the observed cases, this logically expected phenomenon has not been present. It should be determined, if pos-

* Read before the Section on Ophthalmology at the Seventy-Third Annual Session of the American Medical Association, St. Louis, May, 1922.

sible, from which vessels bleeding occurs and the changes recorded which had taken place in the vessels just preceding the hemorrhage.

3. The retina. The changes to look for in the retina are exudates, hemorrhages and pigment disturbances. Here we should determine their location and nature, whether deep or superficial, and whether the choroid is involved in conjunction with the retina.

4. Hemorrhages. These are seen as oval or flame shaped hemorrhages into the retina, as subhyaloid and diffuse bleeding into the vitreous, or as a combination of two or more types. The rate of absorption of blood and whether scar tissue replaces it (retinitis proliferans) should be noted.

5. The vision. This should be recorded frequently during the period of activity.

Because of the many conditions which have been proposed as the cause of this syndrome, it is essential to go into each factor in every case. In addition to the foregoing, laboratory and physical examinations should be made. These may be grouped under several subheads:

1. Blood. Here we should determine the coagulation time (for uniformity in reports, the capillary tube is admirable for this purpose), blood pressure, blood cell counts, Wassermann reaction, and if possible, complement fixation for tuberculosis.

2. Urine. Tests should be made for indican, oxalates and phosphates, in addition to albumin and sugar.

3. Physical examination, for tuberculosis especially, active or latent, syphilis and focal infection.

If the foregoing examinations throw no light on the etiology, it then becomes necessary to determine whether a latent, undiscovered tuberculosis exists, and whether the condition is of a tuberculous character. Here, greater caution must be observed in the diagnostic use of tuberculin than in any other form of ocular tuberculosis, because the manifestation of a focal reaction is hemorrhage and increase in the exudation in the retina and surrounding the vessels. It is quite obvious that a large hemorrhage, which is often replaced by scar tissue, is to be avoided. The textbooks do not emphasize this point sufficiently. I have seen serious harm done by therapeutic doses which were too large.

The test for tuberculosis is best carried out in a hospital, where the temperature of the patient should be recorded every four hours for from forty-eight to seventy-two hours before the first injection of tuberculin. Subcutaneous injections of old tuberculin (O. T.), beginning with 0.00005 mg. as the first dose, should be given, and the vision and fundus should be carefully examined from twenty-four and forty-eight hours after each injection for any change (focal reaction). The injected area should be watched for swelling and hyperemia (local reaction), the temperature recorded every four hours, and other constitutional symptoms watched for (constitutional reaction). If no focal changes occur in forty-eight hours, a second dose of 0.0001 mg. of old tuberculin should be injected, and the same observations made. This is continued if no focal reaction occurs, giving subcutaneous injections at forty-eight hour intervals of 0.0001, 0.001, 0.01, 0.1, 1, 3 and 5 mg. If no focal reaction occurs after the last injection, tuberculosis can probably be excluded as a cause. I have three cases in which the foregoing procedure was carried through with negative results. A local or constitutional reaction is of little value; all that is proved is, that the patient is sensitive to tuberculin, or that he has recovered from an old tuberculosis. However, a focal reaction, even of the mildest character, is diagnostic.

There are some cases in which the most careful investigation proves negative, and in which we are unable to determine the etiology. Because of this fact, and because of the grave visual prognosis, it is our duty to make every attempt to solve this complex problem. This condition evidently has not been observed in animals, and the eyes of man so affected rarely come to enucleation during the period of activity. To my knowledge, no record of histologic examination of an eye during the early active period has even been published. A scientific study of the minute changes in this disease must be made with the ophthalmoscope. There is still much to be investigated and much to be learned with regard to recurrent hemorrhages into the retina and vitreous of young persons.

The terminology of this syndrome is extremely confusing and should be changed. Recurrent hemorrhages of adolescence is a poor term, for in many instances the changes do not begin until later, and in most cases, they continue over a period of many years. It occurs to me that recurrent hemorrhages into the retina and vitreous of young persons is an adequate term and differentiates it from the hemorrhages which occur from arteriosclerosis in older persons.

The term disease has been purposely avoided, because it is believed that this is not a disease, but a symptom due, possibly, to a number of conditions.

Majestic Building.

ABSTRACT OF DISCUSSION

DR. WILLIAM ZENTMAYER, Philadelphia: Dr. Finnoff's plea for a systematic inquiry into the family, personal and eye history in cases of recurrent hemorrhages into the retina and vitreous of young persons is valid and timely. Students should be better instructed in the important and difficult art of history taking, not only in this but in all diseases. One needs but look up the data on a mooted question in published case histories to realize the necessity for this. It is a nice point to decide how much latitude to give patients in recounting their own views, but it must not be forgotten that they may put us on the trail of a possible unsuspected etiologic factor if not restrained, and if we are receptive. Dr. Finnoff points out that in most cases the early changes occur in the peripheral vessels of the fundus. This was well exemplified in one of my cases. In the first, affected eye vision was reduced to light perception, and notwithstanding the fact that the boy stated that his other eye was becoming affected, he had been assured the eye was unaffected. An examination made on the same day that this opinion had been given revealed a corona of small hemorrhages in the extreme anterior zone of the retina. In addition to the physical examination mentioned, I would suggest that a roentgenogram of the sella be made. Fuchs said that tuberculosis of the vessels was usually assigned as the cause of these hemorrhages, but that it certainly was not always the cause. Verhoeff is of the same opinion. I have elsewhere given my reasons for believing that the disease is not always tuberculous, and that even when this is a factor, the striking outstanding syndrome of the disease suggests that there is some disturbance other than tuberculosis to account for this. What this is I do not know; but there are reasons for believing that disturbed action of the pituitary, the suprarenals or both may play a rôle in their causation. Since I first published this view, Friedenberg, Wilmer and others have given expression to the same thoughts. The term suggested by Dr. Finnoff for the disease is comprehensive and preferable to the several others we now have.

DR. ALBERT E. BULSON, JR., Fort Wayne, Ind.: These cases are very interesting, and I want to emphasize again the

importance of calling the internist to our aid. So often examinations conducted in our offices, even with the aid of the laboratory men, are inadequate and incomplete. I recall a case of hemorrhage into the vitreous for which I could find no immediate cause. The report of the blood examination was negative, and the patient was referred to an internist, who insisted on making repeated urinalyses and blood examinations. The Wassermann examination of the blood and spinal fluid eventually proved that the patient had a syphilitic involvement. I venture to say that if we had taken the first blood examination as conclusive, we would even now be in doubt as to the etiologic factor in this particular case. Therefore, I believe that in these cases of recurrent hemorrhage in the young we should have the assistance of the internist, and he should make his examinations thoroughly, that the causative factor may be discovered. He also will be of great service in carrying out the treatment required.

DR. EDWARD JACKSON, Denver: Recurring hemorrhages of the retina may occur in several different diseases. But we do not know in how many others it may arise that have not yet been suspected. We know they arise in tuberculosis and less frequently in syphilis; we know they arise in acute infections, as influenza, and we think they arise from endocrine disturbance. The fact that this symptom—which is a very important one because of the danger of destruction of sight by excessive hemorrhage—may arise from a large number of underlying conditions is a reason for a rather wide examination for the cause. We must have the help of the internist, and we must get all the history we can from the patient and from the patient's medical adviser. The paper covers the direction in which the examination should proceed. Our knowledge will not be much improved or expanded until many cases of recurrent retinal hemorrhage have been investigated along all these different lines.

DR. GEORGE S. DERBY, Boston: There is something lacking in Dr. Finnoff's terminology. I do not think that this condition is entirely confined to young persons. I have followed several cases which could not be distinguished from a recurring hemorrhage in young persons, in people between 40 and 50, and a little over, and on repeated examinations there could not be found the slightest evidence of arteriosclerosis or kidney defect.

DR. WILLIAM C. FINNOFF, Denver: I am glad Dr. Zentmayer emphasized the importance of the endocrines. I agree with Dr. Bulson that the internist should be consulted in these cases, but I meant that under physical examination that is the procedure we should follow. The internist should go over the patient carefully, especially in regard to tuberculosis, if we wish to use tuberculin as a diagnostic measure. I would not think of using tuberculin if there was active tuberculosis elsewhere in the body. The reason I proposed the title "Recurrent Hemorrhages . . . of Young Persons" was that I referred particularly to the findings in 110 cases. I probably overlooked many cases because of the confusion of terminology, but the seventeeen cases I have seen were in persons under 40 years of age.

Fighting Mosquitoes with Fish.—During 1921 fish played a most important rôle in practically all the operations conducted against yellow fever and malaria. Since 1900, when the United States Bureau of Fisheries began its investigations into the usefulness of the top minnow for destroying mosquito larvae, many experiments in the use of fish to keep down mosquito breeding have been made. Among them may be mentioned the work of the New Jersey Agricultural Experiment Station during the years 1902 to 1911; the observations of Geiger on the use of fish in rice fields near Lonoke, Ark.; and the experimental work of Hildebrand of the United States Bureau of Fisheries, near Augusta, Ga., and elsewhere. But the effectiveness of fish as a means of checking the breeding of malaria mosquitoes was first demonstrated under representative agricultural conditions by Dr. H. H. Howard in Hinds County, Mississippi, in 1918 and 1919.—*Eighth Annual Report, International Health Board,* New York, 1922.

RELAPSING FEVER IN CALIFORNIA*

LEROY H. BRIGGS, M.D.
SAN FRANCISCO

True relapsing fever arising from a focus in California seems important enough to warrant the reporting of two cases.

Prior to the announcement of Obermeier in 1873 that relapsing fever was a spirochetosis, a number of cases had been reported throughout the Eastern states, as well as an epidemic among the Chinese population of Oroville, Calif., in 1874. These cases were frequently associated with typhus, and no absolute diagnosis could be made. Since the demonstration of the spirochete, however, the number of proved cases in the United States has been very few, and with the exception of the Colorado instances, all limited to direct importations. Those of Ward [1] and of Tuttle [2] were in Armenians. Carlisle's [3] first patient was a ship's steward from eastern tropical America, and his second case resulted from a laboratory infection from the first. Hunter and Cope [4] reported a case in a man just arrived from Turkey and a second in an Armenian who had been living with him. Goldfarb's [5] two cases were in a mother and daughter living in New York City who had received their infection from a relative just arrived from Russia and suffering from the same disease. Christian's [6] case was in a Macedonian.

In October, 1915, Meader [7] reported before the Colorado State Medical Society five related cases arising from Bear Creek Canyon, Colo., with a doubtful contact from a band of wandering gypsies. Unquestionably, these are the first known instances of relapsing fever from an endemic source in the United States. Two years later, Waring [8] reported before the Denver Medical Society a sixth case in a young boy coming from the same locality as Meader's patients. Since then the *Index Medicus* has given no reference to relapsing fever in this country.

In the two present cases, the infection was acquired at Polaris on the Truckee River, Calif. This river, a famous fishing stream constantly visited by campers and sportsmen, is the outlet of Lake Tahoe, and runs northeast to empty into Pyramid Lake, Nevada. Its course in California is through a fairly well timbered granite country at about 6,000 feet elevation. From Truckee to Reno the main line of the Southern Pacific railroad parallels the river. Polaris is a siding 2½ miles east of Truckee where ice is cut in the winter, loaded into sheds, and used daily during the summer months in refrigerating the overland fruit cars. Many tramps, put off trains at Truckee, find a day or so of employment here, only to move on. It is quite evident, therefore, that there are great opportunities for the dissemination of vermin by a nomadic population.

REPORT OF CASES

Mr. X and his wife were seen at their home, Aug. 21, 1921, having returned that morning from a fishing and camping

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* Read before the Association of American Physicians, Washington, D. C., May 2, 1922.

1. Ward, G. D.: Boston M. & S. J. **142**: 36, 1900.
2. Tuttle, quoted by Carlisle (Footnote 3).
3. Carlisle, R. J.: J. Infect. Dis. **3**: 233, 1906.
4. Hunter, J. W., and Cope, T. A.: Univ. Pennsylvania M. Bull. **21**: 338, 1909.
5. Goldfarb, S. J.: M. Rec. **73**: 433, 1908.
6. Christian, H. A.: Observations on the Spirilla of Relapsing Fever, Arch. Int. Med. **7**: 1 (Jan.) 1911.
7. Meader, C. H.: Colorado Med. **12**: 365, 1915.
8. Waring, J. J.: Colorado Med. **15**: 148 (June) 1918; Am. J. M. Sc. **155**: 819 (June) 1918.

trip on the Truckee River. They had traveled up by automobile, stopping overnight of July 30 at Auburn, a town on the eastern edge of the Sacramento Valley where malaria is moderately prevalent. On the river they had occupied a rough cabin, used in the winter by a watchman employed by the ice harvesting company but unoccupied in the summer. The bedding was their own. On the morning of August 3, Mr. X discovered a blotch of blood on his sheet, and small urticarial marks of what were apparently insect bites on his legs. Three mornings later his wife discovered the same thing, noting blood spots on her sheets and marks of bites on her legs. A careful search for bedbugs had been made previously and was repeated, but with no results. No ticks were seen at any time during the trip.

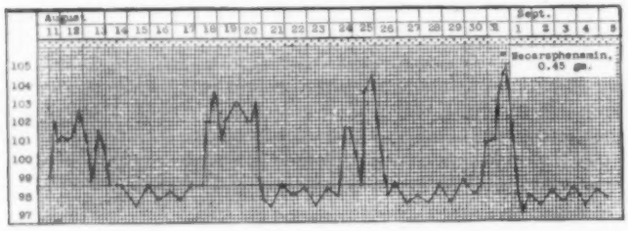

Fig. 1.—Temperature during illness of Mr. X.

On the morning of August 11, without prodromes, Mr. X awoke with a severe headache. At 3 in the afternoon he felt chilly and nauseated, and at 6 had a heavy chill. The temperatures were noted carefully by his wife, and it is from her excellent records that the accompanying charts were constructed later. For the next two days he had heavy sweats, fever and generalized aching pains. Labial herpes was present. There were no symptoms of any respiratory infection. The pulse varied from 62 to 74. He was seen, August 11, and again, August 13, by Dr. Bryant of Truckee, who found nothing except the marked disproportion between pulse rate and temperature. August 14, his fever disappeared, and frequent observations between that date and the 18th always disclosed a subnormal temperature. During this interval there was very decided weakness. August 18, fever was noted again, and that evening he had another chill. For the next three days a repetition of the previous paroxysm occurred, to be followed by another four day remission with weakness. August 14, his wife was taken with what seemed to be an exactly similar illness, except that no herpes was present, and vomiting was a marked symptom. Her paroxysm lasted three days, with six days' normal temperature following.

BLOOD EXAMINATIONS

Date	Stage of Disease, Paroxysm and Day	Leukocytes	Neutrophils, per Cent.	Large Mononuclears, per Cent.	Lymphocytes, per Cent.	Eosinophils, per Cent.	Basophils, per Cent.	Myelocytes, per Cent.	Parasites
Mr. X.									
Aug. 21	Day after 2d pxm.	12,200	55.5	8.5	36.0	0	0	0	None seen
Aug. 24	3d pxsm., 1st day	16,200	81.5	4.5	13.5	0	0.5	0	Present; 1 in 50 oil-immersion fields
Aug. 31	4th pxsm., 2d day	13,000	69.5	11.5	18.5	0.5	0	0	Present; 10 seen in differential count of 200 cells
Mrs. X.									
Aug. 23	2d pxsm., 1st day	4,600	75.0	2.0	23.0	0	0	0	Present; 1 in 200 oil-immersion fields
Aug. 24	2d pxsm., 2d day	10,000	85.5	3.0	11.5	0	0	0	None seen
Aug. 30	2d pxsm., 3d day	.....	67.0	8.0	23.5	0	1.5	0	Present; very few
Aug. 31	3d pxsm., 4th day	.....	64.5	6.0	28.5	0	0.5	0.5	Numerous; 18 seen in differential count of 200 cells

Mr. X is 46. Other than for a branchial cyst as a child, which was repaired, and an appendectomy, his past history is negative. He has lived in California all his life, with the exception of two short business trips to Honolulu. His work is that of an office executive. His habits are excellent. The usual weight is around 175, although he is about 15 pounds under that now. The only complaint is of weakness. Complete physical examination was quite negative. Temperature and pulse were normal. There was no herpes and no skin rash. There was no sign of any respiratory tract infection. The spleen was not enlarged to percussion, nor was it palpable. There was no tenderness anywhere. There was no icterus. The urine was quite negative. The hemoglobin was 95, and the result of the blood count is shown in the accompanying table. There was nothing remarkable in this or in any of the subsequent counts, but they are tabulated together. Although plasmodia were looked for carefully, neither they nor any other parasites were seen. The red cells showed no abnormalities.

No therapy was given. His weakness lessened daily, and he went about his business, watching his temperature twice a day. On the afternoon of August 2·, a rise to 101.6 was noted, and he had a slight headache. He went to his office the next morning, but returned later in the day with a severe headache, back pains, chill and a temperature of 103.6. He was seen later that afternoon with temperature of 104, pulse 60 and respiration 18. His face was flushed, he was bright mentally, had no complaints and did not look especially ill. Examination again was entirely negative. The spleen could not be felt, nor was it tender. The leukocytes were 16,200, with a slight increase in the neutrophils. No plasmodia were found, but a moderate number of spirochetes were present. These will be discussed later. By the afternoon of August 26 he was normal again, and continued so until August 30, when he reported that he felt chilly and by evening had a temperature of 100.8. At this date the urine for the first time showed very rare hyaline casts, but no albumin. His temperature rose all the next day, until by 6 p. m. it had reached the maximum of 105. There was considerable depression and headache, but nothing else. Spirochetes were present in greater numbers, about ten being seen in making a differential count of 200 cells. Twenty cubic centimeters of blood was drawn from a vein for animal inoculation, and he was given 0.45 gm. of neo-arsphenamin intravenously in concentrated solution. The only manifestation of a reaction was an attack of vomiting during the night. The next day he felt much improved, although weak, and had a subnormal temperature. The urine on this day showed no albumin, but showers of hyaline casts. From this time on for the next three weeks his temperature varied from 97 to 98.6, and he rapidly regained his usual weight and strength. The urine promptly became normal.

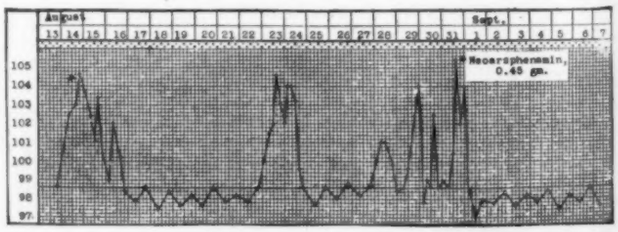

Fig. 2.—Temperature during illness of Mrs. X.

As mentioned above, Mrs. X had had a paroxysm from August 14 to 18. She had been seen at intervals for the past three and a half years. Points of interest in her past history are that she lived in Egypt from 11 to 13 years of age, and while there had what was probably typhoid fever. Her appendix and tonsils have been removed. She was first seen in 1918 for a streptococcus infection of the throat, which subsided in a week without event. During 1919 she was under observation for a slight tuberculous infection in both apexes. There had been loss of weight for more than a year, slight cough and morning sputum for a few months, but no rise in temperature was ever found. Crepitant râles were present in both apexes and persisted for many months, but for the last year she had been in excellent health.

She was not examined, August 21, except that the lung apexes were listened to and found clear. She had no symp-

toms, and seemed to have recovered entirely from her febrile attack of five days before. On the morning of August 23 she felt nauseated and chilly, and had a severe headache and moderate backache. When seen about noon, her temperature was 102, pulse 76, respirations 16. Her face was flushed, but she did not look especially sick. Physical examination was negative except for slight tenderness in the upper left quadrant, noticed in attempting to palpate the spleen. No enlargement of this viscus could be made out. There was no rash or herpes. The urine was normal. The leukocytes were only 4,600. As she was thought to have a plasmodial infection, an especially diligent search was made for these parasites, and it was during this that the spirochetes were found accidentally, two days later to be sought for successfully in her husband's blood during his paroxysm. At this time she was given a simple anodyne and antipyretic. The next day, August 24, there was considerable prostration and some vomiting, although the head and back pains were better. Physical examination was as before, negative except for tenderness along the left costal margin. The leukocytes had increased to 10,000. For the next three days the temperature was normal and she was up and about, although somewhat weak.

August 28, her third paroxysm started and continued four days with much nausea and vomiting, high fever of a septic type, and headache and backache. The temperature reached a maximum of 105.2 on the evening of the fourth day. The spleen could not be felt during this time, and examinations were not noteworthy in any particular. The urine on the last two days showed a few hyaline casts, but no albumin. Spirochetes were found in the blood both August 30 and 31, being especially numerous on the latter date. August 30, 20 c.c. of blood was drawn from an arm vein for animal inoculation. On the evening of August 31 she was given 0.45 gm. of neo-arsphenamin intravenously. This was followed by a moderately severe reaction characterized by vomiting and diarrhea, which continued throughout the night. The next day she was much improved and had a subnormal temperature. Her subsequent course has been exactly that of her husband, with no further relapses and a fairly prompt return to normal.

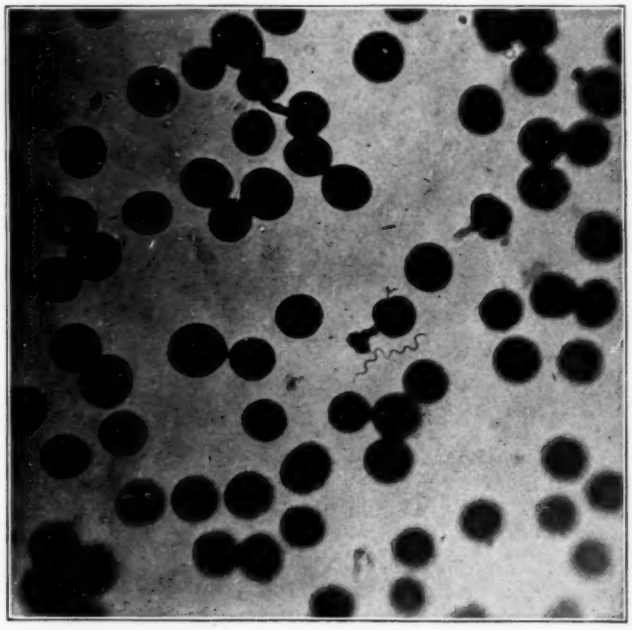

Fig. 3.—Parasite in smear of peripheral blood.

SUMMARY

A man and his wife, while camping in California, were probably bitten by some suctorial insect, presumably a bedbug or a tick, although this cannot be proved. In each case, eight days later, a paroxysm of chills, fever, malaise and prostration ensued and lasted three days. In the case of the husband, three relapses occurred, each more severe than the preceding. With the wife, two relapses occurred, also of increasing severity. During the four observed paroxysms, spirochetes were found in the peripheral blood in increasing numbers. Intravenous injection of 0.45 gm. of neo-arsphenamin promptly terminated the infection in both instances.

COMMENT

Several points demand comment.

Nature of Vector.—There can be hardly any doubt that the infection was introduced during sleep by the bite of some suctorial insect. The finding of bite marks, blood spots on the bedding, and the definite eight day incubation period in each instance points toward this. Lice, ticks and bedbugs are known to transmit this type of spirochetosis to man. From the habits of the patients, as well as the fact that the bites were on the legs, lice undoubtedly can be ruled out. There are in California a number of species of *Ornithodorus,* the genus of tick which so far has been incriminated in the transmission of relapsing fever, but from the description of the bite marks, one would suspect the bedbug rather than the tick as the offender. The infection is thought to be transmitted, not by the actual bite, but by the rubbing or trampling of infected feces and other excretions of the carrier into the abrasion. It has been definitely shown by Dutton and Todd that in ticks spirochetes may be transmitted from infected parent to offspring, and that such infected progeny are capable of passing on the disease to laboratory animals. This fact may be of importance in explaining the occurrence of the Colorado and present cases in regions where the disease has not been known before. How long the spirochete can live in the body of the vector and throughout how many generations it can be carried down are points which as yet are not definitely known. The nature of the floating population along any of the main railroad lines is such that the distribution of a vermin-carried disease may be readily accomplished over a wide area.

The Parasite.—As noted in the case reports, spirochetes were discovered accidentally in the blood of Mrs. X on the first day of her second paroxysm while malarial parasites were being searched for. They were very few, one being found to about 200 oil-immersion fields, and on the next day none were seen. One day later, at the onset of the husband's third paroxysm, spirochetes were found in his blood in greater numbers, one to about fifty fields. They became even more numerous in the other two paroxysms: from ten to eighteen in a differential count of 200 leukocytes.

Morphologically, the organism corresponds to the description of the spirochete of relapsing fever, one of the chief characteristics being the lack of constancy in length, shape and number of curves. They take the ordinary Romanowsky blood stains well, especially if overstained or if the stain is a trifle overalkalized. The length varies from one to two and a half times the diameter of a red cell. The ends practically always taper out to a near point, and occasionally in the longer forms the central portion as well seems to thin out. This was noted by Norris, Pappenheimer and Flournoy,[9] who felt that it was evidence in favor of

9. Norris, C.; Pappenheimer, A. M., and Flournoy, T.: J. Infect. Dis. **3**: 266, 1906.

transverse division. Three times during the examination of the blood smears, two short forms were found in close apposition, but this was interpreted as being due to simple fracture in making the preparations. No undulating membrane or flagella could be demonstrated.

Blood was drawn from a vein in both cases during the last paroxysms, run into citrated tubes, and injected into mice and monkeys as soon as possible. It was observed, however, that motion in the spirochetes had ceased, and as animal inoculation was unsuccessful, there is little doubt that the parasites were killed by the citrate. This was most unfortunate, as by then the patients had received their neo-arsphenamin. Furthermore, as it is impossible to say from the morphology of the parasite which of the four varieties of relapsing fever we are dealing with in a given case, it was doubly unfortunate that the animals were not taken directly to the bedside of the patients and injected,

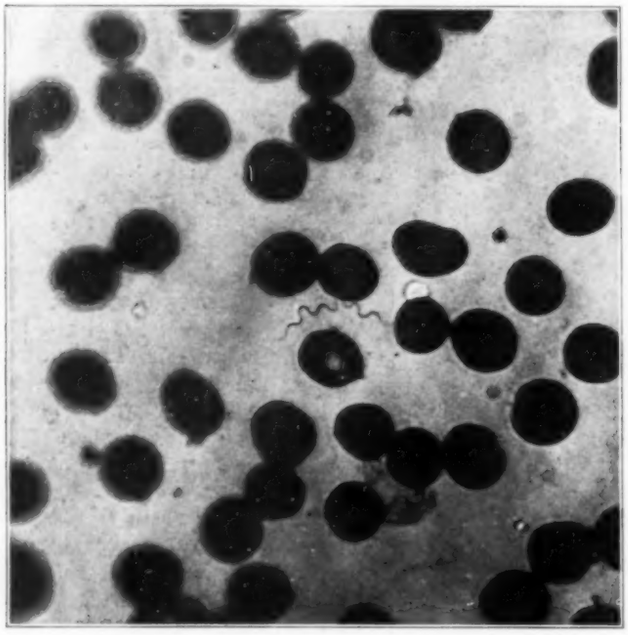

Fig. 4.—Parasite in smear of peripheral blood.

since identification depends mainly on animal inoculation. Final differentiation of the type, therefore, must remain in doubt. Dr. Karl Meyer, professor of tropical medicine in the University of California Medical School, to whom I am indebted for material help and suggestions, believes from the clinical course that it was not the European variety, *Spirochaeta obermeieri*.

The Blood.—Except for the presence of the parasites, the blood showed little of note. The hemoglobin did not change. The leukocytes were counted in three of the four observed paroxysms, and showed a moderate increase except on the first day of the second paroxysm of Mrs. X, when there was a leukopenia. The differential picture showed the usual febrile absence of eosinophils. In three of the four paroxysms there was a slight increase in the neutrophils, although in the last one of Mrs. X the formula was about normal, notwithstanding the fact that this was the most severe of all. The red cells and platelets showed no change.

The Urine.—A number of observers have reported marked urinary changes from renal irritation during the paroxysms. This was not evident in the present cases, although in the last and most severe relapse a few hyaline casts appeared, but no albumin. Mr. X, on the day after his last paroxysm and twelve hours after the injection of neo-arsphenamin, had showers of casts, but two days later the urine was normal. This phenomenon did not occur with his wife.

Miscellaneous Clinical Features.—Splenic enlargement was never demonstrated, another fact at variance with most observations. It may be noted that there was tenderness in the region of the spleen in the case of the wife. The maximum temperature with the subsequent crisis occurred at night in six out of seven paroxysms, a fact mentioned by Strümpell and others. Even during these high temperatures of 104 to 105, the patients did not seem very ill, and were more uncomfortable than anything else. Neo-arsphenamin was most efficacious, half a dose intravenously terminating the infection immediately. In one case it was given at the start of a paroxysm, and in the other toward the end, but no difference in the result could be seen.

How extensive or permanent a focus we have in California can be determined only by a thorough medical and entomologic survey of the district, and by the discovery of other cases elsewhere. Here, where we are constantly seeing malaria, it is imperative that careful microscopic examination of the blood be made before therapy is instituted. It would be a ready assumption that the natural fall of temperature at the end of a paroxysm represented the antiplasmodial effect of quinin, had that drug been given blindly. The demonstration of any further geographic distribution of this disease depends, therefore, on the invariable use of the microscope in all cases of acute remittent fever.

240 Stockton Street.

STUDIES OF BACILLUS FUSIFORMIS AND VINCENT'S SPIROCHETE

I. HABITAT AND DISTRIBUTION OF THESE ORGANISMS IN RELATION TO PUTRID AND GANGRENOUS PROCESSES *

D. J. DAVIS, M.D.
AND
ISADORE PILOT, M.D.
CHICAGO

The association of these two organisms in the body has been noted by many observers in connection with both normal and diseased states. Many points, however, remain obscure, and the literature on the subject is scattered and more or less confusing. The relation of the bacillus to the spirochete is a subject about which differences of opinion exist. We will not discuss their identity or nonidentity here, assuming, however, their almost invariable association in certain localities and in certain processes.

In this paper, we will attempt to furnisn a background for a discussion of infections of a putrid and gangrenous character for which these organisms appear to be commonly responsible. In doing so, we shall

* From the Department of Pathology and Bacteriology, University of Illinois College of Medicine.

* Read before the Section on Stomatology at the Seventy-Third Annual Session of the American Medical Association, St. Louis, May, 1922.

* Because of lack of space, this article is abbreviated in THE JOURNAL. The complete article appears in the Transactions of the Section and in the author's reprints.

first present data concerning their more common normal habitats about the body, a subject to which little attention has been given. Later, we shall discuss a number of disease processes with which they are intimately concerned, together with certain predisposing factors.

MORPHOLOGY AND NORMAL HABITAT

Some years ago, one of us[1] described the so-called actinomyces-like granules in the human tonsils. In this paper, it was pointed out that they have nothing to do with true actinomyces. Since then, we have confirmed these observations and have added others.[2] The granules are found in 30 per cent. or more of tonsils removed, and probably form at times in all tonsils. They are foul-smelling, small, gray or yellow, often bilateral granules, single or more often multiple, lying in the crypts, never in the tissues proper. On microscopic section, they are largely made up of filaments arranged in raylike fashion suggesting actinomyces (Fig. 1). At their margins are terminal structures which may be roughly compared to a test tube brush (Fig. 2). Filaments form a central shaft, about the end of which small fusiform, oval or large diplococcoid bodies are arranged around and perpendicular to it. Throughout the mass are many typical fusiform bacilli and coarse spirochetes; also many gram-positive diplococci. The fusiform bacilli are gram-negative and are typical in morphology, and they may be grown in pure culture under anaerobic conditions. The spirochetes are actively motile, gram-negative organisms with from four to eight or more turns. They are easily distorted in smear preparations, often becoming linear, curved or ring-shaped. Many have quite the same morphology as the organism commonly called *S. vincenti* and are probably identical with *S. macrodentium* and *S. refringens;* others are smaller and finer. In general, the spirilla forms correspond to those described by others and divided into three types. We will not go further into their morphology here. The gram-positive diplococci have been specially investigated by us[2] and shown to consist both of hemolytic and nonhemolytic streptococci, the latter being predominant and often revealing distinct anaerobic properties.

The coarse filaments making up the bulk of the granules are segmented but apparently never branched, unless possibly at their terminals. They are gram-negative, though destained with some difficulty. At their terminals are masses of the oval and elongated bodies, as described above, arranged about the terminals and easily removed, leaving a stalklike structure with fine granules along its surface. This filamentous organism has not been cultivated. The question arises as to the relation of these filamentous forms to the fusiform bodies, but we feel it cannot be answered at present. We have considered seriously the possibility of their being one and the same organism; that is, the fusiform bacilli may be simply a phase in the development of the organism. This was the view suggested in the paper referred to above, but it is purely hypothetic. Another possibility is that the fusiform bodies may be spores originating at the terminals in connection with the fruitlike structures.

Whatever their relation may be, we may recognize these several structures which are practically always found together in the tonsil granule; namely: (*a*) the segmented filaments with peculiar enlarged and brushlike terminals; (*b*) the diplococcoid and short fusiform bodies (possibly spores of the fungus); (*c*) the typical fusiform bacilli and spirochetes, and (*d*) gram-positive diplococci (streptococci). Occasionally, other forms are seen, but they are not constant. We may state, then, that this peculiar granule in the tonsil crypt has a remarkably constant structure in which these several organisms are growing together in symbiosis. The possibility exists that *a*, *b* and *c* are developmental forms of one or possibly two organisms.

One of us has observed that in adenoids such granules do not occur. Fusiform and spirochete forms are evidently rare. This problem is being investigated further at present.

Fig. 1.—Microscopic section of an actinomyces-like granule of the tonsil, showing the raylike structure of the filaments; × 120.

It has long been known that these organisms exist in large numbers about the teeth. Indeed, spirilla forms are among the very first microscopic organisms seen by the human eye, since Leeuwenhock in 1683 observed and described them in tartar removed from the teeth. Our observations, as well as those of many others, indicate that they are constant inhabitants. Especially are they numerous on teeth with abundant tartar deposits. We have investigated these deposits with the following results: On the enamel of the teeth just at or above the gum line and especially between the teeth are accumulations of a filamentous growth attached to the surface. They may be scraped away, and when suspended in water or glycerin are seen to be composed of loose flaky granules having a radiate filamentous structure. At the margins are numerous brushlike processes with a central strand and coccoid or elongated and fusiform bodies arranged about the terminals (Fig. 3).

1. Davis, D. J.: J. Infect. Dis. **14**: 144, 1914.
2. Pilot, Isadore, and Davis, D. J.: J. Infect. Dis. **23**: 562 (Dec.) 1918.

The structure is quite comparable to the tonsil granules described above, except that, as a rule, it has an attached surface. Smears of such material reveal always large numbers of coarse spirochetes, fusiform bacilli and gram-positive streptococci, these various organisms being scattered throughout the granule. The terminal strands are somewhat clublike and often divided, and the attached bodies, arranged perpendicularly, are easily removed in making the preparations. Long segmented gram-negative thread forms appear, comparable to those in the tonsil granules. Many diplococcoid and short fusiform bodies are interspersed in the smear. On the whole, it is quite impossible to distinguish a smear preparation made thus from the teeth from one made from the tonsil granule. From such material, fusiform bacilli may be cultivated anaerobically in tissue mediums which yield a most putrid and very typical odor. The streptococci are readily grown and are nearly always of the viridans type. Occasionally, a few hemolytic streptococci are found.[3] The filamentous forms and elongated terminal sporelike bodies do not appear in culture.

These filamentous organisms are the forms found so abundantly about the teeth and usually spoken of as the buccal leptothrix. Since they have not been grown, it is impossible to state clearly what their classification may be. They have been very well described by Williams,[4] and earlier by Vicentini, by whom they are referred to as *Leptothrix racemosa*. They are considered by these workers as a form of fungus, the terminals presenting spore-bearing structures. They were not able to cultivate them. Our work confirms the observations of these writers, and also leaves no doubt in our minds that the filamentous forms in the tonsil granules are the same organism. They make no mention of the latter; neither do they discuss the spirochetes, fusiform bacilli and streptococci which we find always associated and which are of primary interest to us. Here, then, is a second habitat of the latter forms, evidently growing together symbiotically, quite like the tonsil organisms.

Fig. 2.—Brushlike ends at margin of a tonsil granule; × 1,000.

A third locality for the growth of *B. fusiformis* and spirochetes is about the genitals: namely, in the smegma under the prepuce in the male and about the clitoris in the female. Brams, working with us, has found them in 51 per cent. of specimens of smegma taken from the preputial secretions of 100 normal uncircumcised adults. As a rule, they are found most often and in largest numbers in the secretions of persons with long foreskins who rarely cleanse these parts. They are nearly always associated with staphylococci (90 per cent.). Occasionally, hemolytic streptococci occur (9 per cent.), and more often *B. coli* and diphtheroids are found. Filamentous forms or raylike granules comparable to those of the teeth and tonsils were not seen in any instance. In anaerobic cultures, using a modified Dick plate of normal preputial secretions, long and short forms of *B. fusiformis* were cultivated.

Specimens of material from about the clitoris were obtained from twenty-four normal pregnant women for us by A. E. Kanter. In fifteen, *B. fusiformis* and spirochetes were found, together with gram-positive cocci and many gram-negative bacilli, usually *B. coli*. In aerobic cultures, *Staphylococcus albus* appeared in nine and *Streptococcus hemolyticus* in one; in anaerobic cultures, fusiform bacilli were grown in nine of eighteen specimens. No filamentous organisms or raylike bodies or clusters simulating the teeth or tonsil forms were noted. The spirochetes vary in size and form, some being coarse and wavy with several turns and others being finer. As stated, in all instances they were associated with fusiform bacilli (Fig. 4).

Observations by others have been made on the occurrence of spirochetes about the genitals. Noguchi[5] cultivated three different types from normal male smegma; namely, *Spironema refringens, Treponema colligyrum* and *Treponema minutum*. He makes no mention of the occurrence of *B. fusiformis*, though, from his photomicrographs, we believe they were present in at least some of his specimens. We know of no other observations on the presence of fusiform bacilli in normal smegma, male or female.

A possible fourth locality for the existence of these organisms is the gastro-intestinal canal. Here spirochete forms have been noted by many observers, among the earliest being Bizzozero, who observed them in the lumen of the gastric glands in the stomach of the dog. Many workers have noted them in various conditions; but we know of no observations on the existence of *B. fusiformis* in the normal intestine.

RELATION TO DISEASE PROCESSES

With the foregoing discussion of the normal habitat of these organisms as a basis, we shall now take up their relation to disease processes. For a long time, their pathogenicity has been recognized and their specific etiologic relationship to a number of infections has been quite generally admitted. We will briefly refer to some of these disease processes, discussing them in the light of the data referred to above. We shall see that the lesions may conveniently be grouped in relation to the normal distribution of these organisms in the body.

First, let us consider those necrotic and putrid conditions that appear about the mouth, throat and, in general, the respiratory passages, which we believe it reasonable to assume are usually dependent on or in relation to the tonsils and the teeth, as distributing foci for fusiform bacilli and spirochetal forms, together with pyogens, especially streptococci.

Vincent's Angina.—B. fusiformis and spirochete forms are generally conceded to be the cause of this condition. They are always present in large numbers and are sufficiently characteristic in smear preparations for diagnosis. During the past spring, there have been many cases in Chicago as well as in other localities.

3. J. Dent. Res. **3**: 63, 1921.
4. Williams, Leon: Dent. Cosmos **41**: 317, 1899.
5. Noguchi, Hideyo: J. Exper. Med. **27**: 667 (June) 1918.

Examination of the membranes revealed many typical bacilli and spirochete forms. In view of the fact that these organisms are so often associated with filamentous forms in the crypt granules, the exudates were examined with this in mind. From several cases, the exudate was obtained in smears; also the exudate was suspended in glycerin and examined for the raylike granules and the characteristic terminals. While a few thread forms appeared, nothing was seen indicating that in the exudate there is any tendency to form the granules referred to. Cocci, chiefly *Streptococcus viridans,* are always found scattered about in the exudate, from which they may readily be cultivated. Evidently, the exudate is formed as a result of the proliferation of the two organisms in question, no doubt at times complicated by various pyogens, especially streptococci, a fact noted by other writers. Sometimes the beginning of the exudate appears to be in intimate relation to the mouths of the crypts, though we cannot state that this is always true. The fusiform bacilli and spirochete forms present no differences from the organisms observed in the tonsil crypt granules, and naturally suggest the possibility that the infection, at least at times, arises from this source.

Acute ulceromembranous gingivitis as described by Gilmer [6] and others appears to be an infection about the gums of quite the same character as Vincent's angina. Tunnicliff [7] has established the etiology, finding fusiform bacilli and spirilla forms comparable to those found in Vincent's angina. This is in accord with the findings of other workers; while most writers on this topic are agreed that, while the two conditions are the same, it is no doubt true that the predisposing factors are different, and this, combined with the different anatomic structures involved, justifies one in differentiating them. That their epidemiology does not always correspond is further reason for so doing.

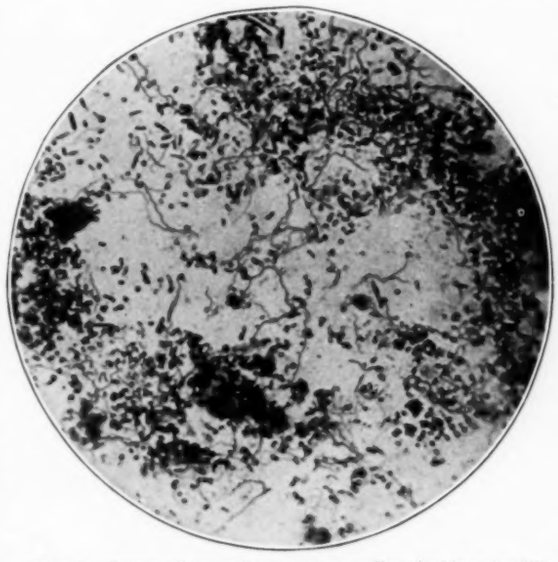

Fig. 4.—Smear of normal smegma revealing fusiform bacilli, spirochetes and cocci; × 1,000.

Noma.—With the foregoing infections is to be mentioned noma. The literature is extensive, and Weaver and Tunnicliff,[8] in a comprehensive paper, have made an analysis of it here unnecessary. They established as the direct etiologic factors the fusiform bacillus and spirilla forms, acting along with well-known predisposing factors of a preceding severe and debilitating contagious or infectious disease, especially measles. Lesions of the mucous membrane of the mouth and throat commonly, if not constantly, initiate or precede the necrotic and gangrenous processes which usually occur about the cheek and maxillary region. Streptococci and other pyogens are often associated with the spirilla forms and fusiform bacilli. We find no mention of granular or raylike bodies or organisms comparable to the filamentous structures about the teeth and in the tonsils.

Pharyngomycosis.—This is apparently a well-defined clinical condition, with a definite pathology. Leptothrix and filamentous forms have been described as composing the firm adherent exudate on the pharynx and tonsils. Through Dr. Shambaugh and Dr. Hall, we have had an opportunity to examine two cases. The exudate from one revealed, in addition to unbranched filaments, an enormous number of typical *B. fusiformis* and coarse spirochete forms. No raylike granules were seen in this case, but the exudate was not firm or dense and apparently had not been present long. In a second case, the exudate was typical. It was firm and tough and could be removed only with the greatest difficulty. Strands of the grayish growth protruded from some of the crypts of the tonsils. This material in unstained mounts, especially in glycerin, revealed many structures similar in arrangement and form to the filamentous raylike growths from the teeth and tonsil granules. At the margins were finger-like or brushlike processes, with central strands having round or oval and elongated bodies attached. Interspersed were large numbers of fusiform bacilli, coarse and fine spirochetes and many diplococci. Stained with gram, the smear preparations are practically indistinguishable from similar preparations from the crypt granules or the teeth.

In the exudate of this case were large clusters of desquamated epithelial cells among which the growths above noted appeared. We are not aware that the raylike and finger-like structures have been noted before in pharyngomycosis. The importance of this is at once evident, since, if this is true, it strongly suggests that pharyngomycosis may be caused by the excessive proliferation of the organisms which make up the crypt granules. We have never noted before that the raylike granules cause definite lesions, though for a long time we have sought for a definite pathology of the crypts, dependent on their presence. In crypts, when the granules are present, especially in large numbers, the epithelium may be denser and thicker adjacent to the masses, but we have never before observed that the organisms of the granules penetrate or even become adherent to the epithelium. The bodies may be formed deep in the tonsil tissue at times, and have so been described by others, but such instances, we feel sure, were artefacts. We are making further studies of these tonsils and of other cases.

Pyorrhea Alveolaris.—In pyorrhea, it is well known that fusiform bacilli and spirochetes occur practically constantly in large numbers, and to them has usually been ascribed a secondary rôle. This is probably correct, though it should be emphasized that these organisms are not without danger and are no doubt largely responsible for the fetid odor and for at least some of the necrosis that occurs. In mercurial stomatitis also, they have been observed in large numbers. In this connection, it is interesting to remember

6. Gilmer: Dent. Rev. **20**: 459, 1906.
7. Tunnicliff: J. Infect. Dis. **2**: 446, 1905.
8. Weaver and Tunnicliff: J. Infect. Dis. **4**: 8, 1907.

that, years ago, Babes[9] and others, noting these organisms in large numbers in the foul mouths of scorbutic patients, ascribed an etiologic significance to them. Cocci, especially streptococci, always occur in large numbers, a fact commented on by many. We mention it here because of the possible symbiotic relationship comparable to that observed in the actinomyces-like granules of the tonsils.

The presence of *B. fusiformis* and spirochetes in putrid alveolar abscesses has been noted by Vincent.[10] We are under the impression that these organisms are responsible for the putridity of such lesions in most cases; but this point requires further investigation.

Putrid Pneumonia and Lung Gangrene.—The occurrence of the two organisms in these conditions has been noted. Rona[11] especially has made important observations in this connection. We have observed a number of cases, all with foul, fetid sputum teeming with *B. fusiformis* and spirochete forms, together with streptococci.

The sputum of fusiform-spirochete pneumonia has the typical putrid odor, difficult to describe but quite characteristic. It can be readily distinguished from *B. coli* odor and pyocyaneus abscess, with both of which we have had occasion to compare it. We have also encountered very foul sputum from a patient having putrid bronchitis, which did not contain the spirochetes. Other organisms besides the fusiform bacillus and spirochetes may, of course, be responsible for foul-smelling sputum.

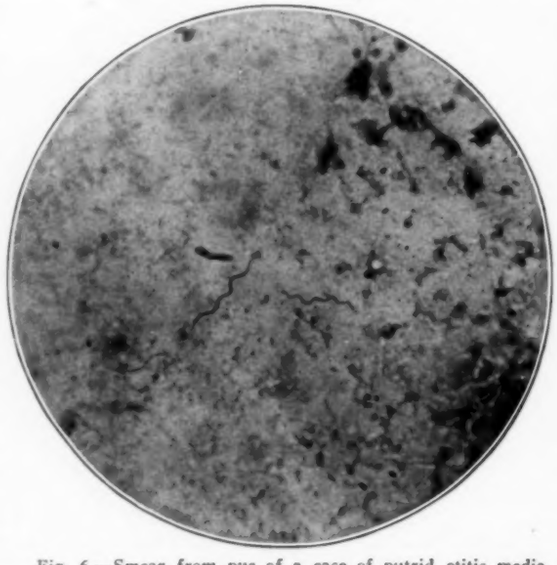

Fig. 6.—Smear from pus of a case of putrid otitis media. Fusiform bacilli, spirochetes and cocci are present; × 1,000.

Infection with fusiform bacilli and spirochetes may be superimposed on a pulmonary tuberculosis. This is illustrated by a patient now under observation who is in an advanced state of tuberculosis and is expectorating very foul sputum. Cocci, together with *B. fusiformis* and spirochetes, occurred in great abundance in the sputum, which also harbored many clumps of tubercle bacilli. This patient, on physical and roentgenologic examination, presented a bilateral tuberculosis involvement, with a large cavity in the right lower lobe. It should also be pointed out that syphilis is not in any way a factor in these infections.

Bronchitis and bronchiectasis are conditions often accompanied by sputum having a putrid odor. These infections are chronic, continuing for years, with recessions and exacerbations. An anaerobic flora often predominates in these cases, in which fusiform and spirochetal organisms play a prominent rôle. They have been noted by a number of workers. An interesting complication of these conditions, noted years ago, and now by many writers, is the occurrence of brain abscess.

The bronchial spirochetosis described by Castellani[13] may be here mentioned. Many observations have now appeared confirming this contribution. The question has been already raised as to the relation of Castellani's spirochetes to the spirochetes of Vincent that occur in the putrid lung conditions associated with fusiform bacilli. At the present moment, the idea prevails that the two are different, and that the former is peculiarly a tropical spirochetosis in which symbiosis with fusiform bacilli does not play a significant rôle. The sputum described in tropical pulmonary spirochetosis is usually thin, watery, and not foul-smelling.

Otitis Media.—Putrid otitis media deserves consideration here, since *B. fusiformis* and spirilla forms have been found by a number of observers in the discharges. Holt[14] described "noma" of the ear, five times, preceded by an otitis media. We are investigating this condition further, especially with reference to the normal flora of the ear passages, about which little seems to be known. Examination of foul, purulent discharges from the middle ear in six patients[15] revealed *B. fusiformis*, coarse spirochetes and varying numbers of gram-positive cocci, frequently along with diphtheroids (Fig. 6). So far, all the putrid discharges showed the fusiform and spirochete forms. These cases were of long standing, varying from ten to twenty years. In six chronic discharging ears, the discharge being nonfetid in character, the fusiform and spirochetal organisms were not found.

Putrid and Gangrenous Infections Following Teeth Wounds.—Foul-smelling infections of the skin have been observed in which the source of infection was from the organisms about the teeth. Hultgen[16] reported acute partial gangrene of the finger of a girl who habitually bit her finger nails. *Bacillus fusiformis* and spirochetes were demonstrated in the wound and about the carious teeth. Peters[17] made a similar observation in a finger wound following a blow striking the teeth. It is also interesting to note the occurrence of "fusospirilla" organisms in gangrenous wounds which were favorably influenced by the local and intravenous use of arsphenamin.[18]

The various conditions referred to above constitute a group of infections intimately related to the buccal and respiratory tracts. Another group of infections of this type concerns the genitals and adjacent parts in both males and females. The occurrence of fusiform bacilli and spirochete forms normally in the preputial secretion and about the clitoris was noted earlier in the paper, and it appears reasonable to assume that, with proper predisposing factors, these organisms are responsible for gangrenous processes in this locality.

We have, with Brams, studied a series of five cases of erosive and gangrenous balanitis observed at the

9. Babes, in Kolle and Wassermann: Handbuch der pathogenen mikroorganismen, 1907, p. 280.
10. Quoted by Babes, Footnote 9.
11. Rona: Arch. f. Dermat. u. Syph. **74**: 171, 1905.
13. Castellani: Lancet **1**: 1384, 1906.
14. Holt, L. E.: Diseases of Infancy and Childhood, 1906, p. 290.
15. We are indebted to Dr. S. J. Pearlman for this material.
16. Hultgen, J. F.: Partial Gangrene of the Left Index Finger, J. A. M. A. **55**: 857 (Sept. 3) 1910.
17. Peters: J. Infect. Dis. **8**: 455, 1911.
18. Ravaut: Presse méd. **22**: 712, 1914.

Cook County Hospital. As has previously been observed in such cases, especially by Harris and by Corbus,[19] fusiform bacilli and spirochetes were found constantly and in large numbers in these cases. Associated with them were varying numbers of other bacteria, especially staphylococci. Granules or raylike bodies were not found. These cases did not give a history of saliva contact to explain the presence of these organisms, and it was this fact that led to a more detailed investigation of the flora of the normal smegma, to which reference has already been made. This comparative study of the flora of the normal preputial and clitoris secretion and the secretions and pus from cases of balanitis revealed a striking similarity in both smears and cultures, indicating that gangrenous processes in these parts are not necessarily dependent on saliva contact but may arise locally, particularly in persons with retention of these secretions from any cause. Neo-arsphenamin has been used in these cases with encouraging results. A more detailed report of these studies will be published later.

The fact that fusiform bacilli and spirochete forms exist in the mouth and tonsils in such large numbers would lead one to suspect their presence in the gastro-intestinal tract, at least at times. As stated earlier in the paper, we are not aware of observations on the occurrence of *B. fusiformis* in the normal gastro-intestinal canal, though spirochetes have been described in a variety of conditions. In pathologic lesions of the appendix, however, especially gangrenous, instances of infections with spirochetes and fusiform bacilli are recorded. This fact would suggest that, normally, such organisms exist in the bowel and appendix lumen and under certain conditions cause the gangrenous process.

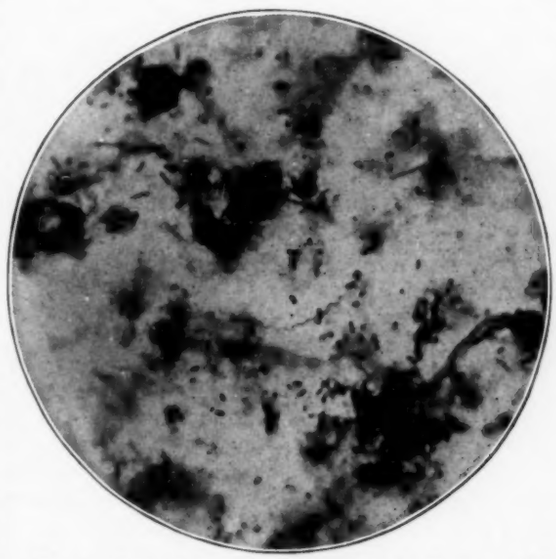

Fig. 8.—Smear from pus of pleural cavity from a rabbit with experimental putrid empyema produced by the injection of macerated tonsil granules. Three varieties of organisms are present, B. fusiformis, spirochetes and cocci; × 1,000.

In the examination of gangrenous appendixes from six patients, in one instance fusiform bacilli together with spirochetes and colon bacillus were found. In this patient, the onset was typical and occurred thirty-six hours previous to the operation. Grossly, the entire appendix was greenish-gray, and the lumen was filled with greenish-black exudate, consisting of necrotic mucosa, pus cells, bacteria, which were chiefly short, gram-negative bacilli, fusiform bacilli and spirochetes. In two other instances, fusiform bacilli occurred without spirochetes. Heyde[20] described the fusiform bacillus with the spirochete in eight of 102 instances of various forms of appendicitis.

ANIMAL EXPERIMENTS

For the experimental production of putrid and necrotic processes with these organisms, we have found the rabbit especially suitable. Introduction of the material under the skin in suitable amounts in the region of the neck or directly into the pleural cavity will result in a few days in a putrid process, should *B. fusiformis* and spirochetes be present. We have not as yet attempted to work with pure cultures. The presence of the associated cocci, especially streptococci, is no doubt an important factor in determining the character of the lesion and exudate. The cocci appear to be the more aggressive, advancing into adjacent tissue or organs; whereas, the fusiform bacilli and spirochete forms follow and cause the necrotic and gangrenous process. The streptococci will often be found in the heart's blood or in the adjacent pleural cavity, or in the peritoneum in pure culture; whereas, the other organisms tend to remain at or near the site of injection, causing there the putrid lesion.

If the dosage is large enough, the rabbit dies within a few days, and at the site of the injection will be found an extensive necrotic and putrid process. If this is the pleural sac, the entire cavity will be filled with such an exudate, the lung being compressed and the heart pushed to the opposite side (Fig. 7). Early, the exudate is serous or serofibrinous, in the course of a few days becoming less fluid, and later changing to a grayish, cheesy mass. Early in such lesions, the flora consists of cocci together with fusiform bacteria, both long and short forms, and spirochetes (Fig. 8). After several days, if the animal lives, the exudate becomes less putrid, and the spirochetes disappear first. After ten days or thereabouts, they are absent, or very nearly so. The fusiform organisms tend to remain longer, but these in non-fatal cases usually disappear before the coccal forms.

Eight rabbits were inoculated intrapleurally with macerated granules in amounts varying from one to four small granules. All these animals died in from six to ten days, with findings in accord with the foregoing statements. Material from the tartar of normal and pyorrheic gums, from Vincent's angina exudate, from sputum or pus of two cases of lung abscess, and from the purulent secretion of gangrenous balanitis, as well as normal smegmas, was likewise introduced into rabbits, with corresponding results.

PATHOGENESIS

In a discussion of the pathogenesis of these infections, it is necessary to refer briefly to certain principles involved which are important in understanding not only the origin but also the localization of the processes. Concerning the general type of bacteria known as opportunists, to which the organisms discussed in this paper belong, we recognize that they have a definite and striking distribution in the body. We[21] have called attention to this in connection with streptococci, showing that the tonsils and pharynx are the normal habitat for the hemolytic streptococci in the body and

19. Corbus, B. C.: Erosive and Gangrenous Balanitis, J. A. M. A. **60**: 1769-1774 (June 7) 1913.
20. Heyde: Beitr. z. klin. Chir. **76**: 1, 1911.

21. Davis, D. J.: Habitat and Distribution of Streptococci in the Body, Illinois M. J. **36**: 134 (Sept.) 1919. Pilot, Isadore: Bacteriology of the Adenoids, J. Infect. Dis. **29**: 47-66 (July) 1921.

that most streptococcal infections occur at or near these sites. Distant infections may occur, but if so they may usually be traced back to these localities as ultimate sources. So with pneumococci in the throat and varieties of intestinal bacteria in the bowel, staphylococci constantly inhabit the skin, and when certain predisposing factors exist, or when virulence is enhanced, lesions appear, usually on or near the skin. Phemister,[22] for example, has recently observed that, in cases of staphylococcus osteomyelitis, he is able in most instances to find a definite lesion of the skin, such as a furuncle or slight wound infection, from which atrium the infection resulted. When these different bacteria cause infections, they almost invariably do so in the locality in which they normally live.

In analyzing the various putrid and gangrenous processes in which *B. fusiformis* and spirochetes play a rôle, we see that they relate themselves in an interesting way to the normal habitats of these organisms. A large number of such processes begin about the pharynx and mouth, where these organisms exist in largest numbers. Less frequently, they occur in the bronchi, lungs, pleura, middle ear, etc., parts further removed but still all more or less accessible to infected material from the foci in the mouth and throat. Also, about the genitalia occur the gangrenous processes in the male and female, in parts adjacent to the normal habitat of these organisms.

In this type of infection, we are dealing with processes in which predisposing factors no doubt play a very important and, apparently in most instances, the determining rôle. The occurrence of noma in children following various acute and chronic diseases is a well known illustration. Persons suffering with a variety of diseases, poorly nourished, and with unclean mouths, are most often attacked; and in balanitis lack of cleanliness appears to be a common determining factor.

There appear to be some exceptions, however, to the foregoing statements. In connection with Vincent's angina, especially, outbreaks and definite epidemics are well known in which large numbers of normal persons without a recognizable predisposition are infected. Epidemics of noma have been reported [23] and Holt [14] states that it may be contagious. To explain this, we may assume that, like other bacteria, *B. fusiformis* and spirochetes may take on a heightened virulence or at least take on a property which permits them to gain a foothold more readily in the tissues. We do not understand from the literature that the epidemic forms are more severe than the sporadic cases.

PROPHYLAXIS

No doubt something can be done to diminish the number of organisms of this character now since we know more definitely where they live. While it may be out of the question completely to disinfect the mouth or the tonsils, the number of bacteria harbored there may be greatly reduced by various procedures. In dealing with organisms of this general type, diminishing the dosage of bacteria generally is an important element in prevention. Removal of the tonsils and draining of the crypts containing the granules are rational procedures to pursue relative to the hygiene of the tonsil. Thorough and frequent cleansing of the teeth, especially between them and about the gums, removal of tartar and of pus pockets, and in general the establishment of a clean, normal, healthy mouth would clearly be indicated in this connection. It would appear reasonable to exercise special precaution in these directions in persons about to undergo anesthesia for any purpose, but especially in tonsillectomy or operations about the mouth or throat.

About the genitals in the male, frequent cleansing of the preputial sac would seem to be practically a sure prevention; and in females, the parts about the clitoris should receive proper attention. Here, it may be pointed out, is another reason for circumcision, for in the circumcised male these infections practically do not occur.

TREATMENT

In the treatment of fusiform bacillus-spirochete infections, arsphenamin and neo-arsphenamin have been employed. On the basis of the marked results in spirochetal diseases such as syphilis and yaws, arsphenamin has been extended in its use to other conditions, particularly infections in which the Vincent spirochete plays a rôle. Encouraging results have been obtained in the local and intravenous introduction of arsphenamin in Vincent's angina and gingivitis. Our experience is thus far limited. In cases of balanitis and pulmonary infections, arsphenamin treatment was followed by recovery or improvement. It should be remembered that, while the arsphenamin has spirocheticidal action, it may not directly influence the associated organisms, i. e., the fusiform bacillus and the pyogens. The best results may be expected in lesions which reveal the spirochetes as the predominant infecting organism.

SUMMARY AND CONCLUSIONS

There are three chief habitats of *B. fusiformis* and spirochetes in the human body, namely: (1) the crypts of the palatine tonsils, chiefly in the so-called actinomyces-like granules; (2) the teeth, especially the tartar deposits at the gum line, and (3) the smegma in the preputial sac in the male and about the clitoris in the female. To these habitats may possibly be added the intestinal canal.

In the mouth and tonsils, streptococci are always associated with the fusospirochete organisms, and in smegma staphylococci always occur with them. Other organisms may also be associated. Symbiotic relationships between these several organisms seem here to be an important factor.

These habitats evidently determine the localization of gangrenous and putrid infections of this type. Vincent's angina, ulceromembranous stomatitis, noma, putrid otitis media, putrid bronchitis and gangrenous pneumonia are lesions of the respiratory passages or parts intimately related thereto and caused usually by these organisms. The organisms presumably come originally from the mouth or tonsils, or both. The several gangrenous processes that occur about the male and female genitals presumably result from invasion by these organisms that occur normally there. Some cases of gangrenous appendicitis appear to arise similarly from the fusospirochete organisms of the intestine.

Predisposing factors are usually of first importance in determining the development of these organisms. Apparently, at times, they may, like other bacteria, develop a degree of virulence sufficient to enable them to gain a foothold in normal tissues.

22. Phemister, D. B.: Hematogenous Staphylococcus Infections Secondary to Foci in the Skin, J. A. M. A. **78**: 480 (Feb. 18) 1922.
23. Am. J. M. Sc. **122**: 527, 1901.

Material containing fusospirochete organisms and pyogenic cocci from teeth, tonsils, smegma, putrid sputum, etc., when injected into rabbits intrapleurally or subcutaneously, will cause putrid and gangrenous lesions containing these organisms. The cocci, especially streptococci, are the aggressors and may alone invade adjacent cavities and the blood stream. The fusospirochete organisms tend to remain more localized, causing necrosis and gangrene in the already invaded tissues.

Proper hygiene of the tonsils, teeth, gums and genitals should greatly diminish the number of these organisms and reduce the incidence of infections of this character.

508 South Honore Street—1316 Millard Avenue.

INDUSTRIAL OPHTHALMOLOGY

A SURVEY OF TWENTY-FIVE THOUSAND CASES *

V. E. VAN KIRK, M.D.
PITTSBURGH

The series of cases on which this survey is based comes from a steel mill employing about 8,000 men. It consists of furnaces, open hearth and Bessemer, rolling mills and the various coordinating departments.

The medical and "safety first" departments were organized in this mill about twelve years ago. Before this time serious cases were sent to the hospital, and minor injuries were treated by a watchman or clerk. The equipment for the care of injured employees consisted of a few litters, bandages and such drugs as the layman in charge thought most efficient. Eye cases were handled in the same haphazard manner. Foreign bodies were removed by a fellow employee. Such a thing as organized "safety" work was unknown. When these departments were organized, the greatest trouble was to educate the men as to the value of the various means taken to prevent accidents. With difficulty the men were taught the great importance of the prompt treatment of all minor injuries. Safety devices of all kinds were looked on with scorn.

At this time, safety first work was but little known and had few facts to support its teaching. To superintendents, foremen and laborers alike it was just a "fool idea," the dream of a man who wore a white collar. But corporations are not dreamers, and the cost of accidents in money and lost efficiency forced them to adopt some method to reduce the number of injuries. Bulletin boards, slogans, "no accident weeks" and all the methods so well known today were employed to secure the cooperation of the men. In a short time the value of safety first work was proved to all. But the history of the pioneer work in safety first has been written elsewhere and can only be mentioned here.

Safety devices of various types were designed after study of the accident possibilities of each type of work. Today many concerns specialize on this type of equipment. The various types of goggles to be used in a mill should be inspected by the ophthalmologist with care, as many of them are not fit to be worn. The frames can be had in different weights for various kinds of work. The thickness of the glass varies also, but must always be a plane glass. The goggles must be in various sizes so that all the men can be comfortably fitted.

Goggles are worn by men in chipping or grinding, for example, where there is increased danger of eye injuries. Plate glass shields are used on punches and like machines to protect the worker from chips of steel. Masks are worn by men pouring babbitt metal. Special goggles of various types are worn by men using the oxyacetylene torch or electric arc in welding, furnace workers, and others exposed to intense light. Many other devices, each suited to its particular type of work, are in constant use. In twenty or twenty-five cases a year it is found that the vision of one or both eyes has been saved by the use of goggles. This alone saves the company about $50,000 or $60,000 in compensation a year. A brief history of such an accident

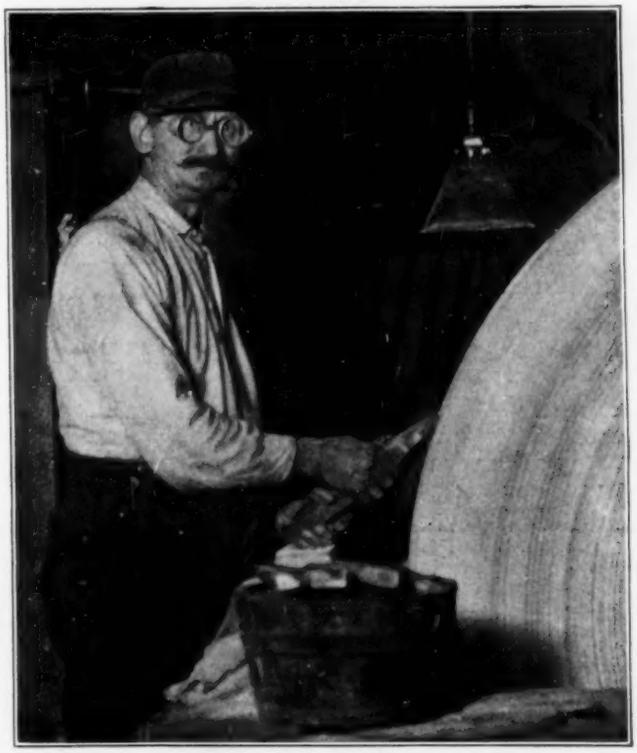

Fig. 1.—Tool grinder, properly protected.

with a photograph of the worker wearing the broken goggles makes a bulletin exhibit of great educational value. In cases in which a correcting lens is necessary, the company has the man's eyes refracted and he is furnished goggles with proper lenses.

The employees are now on an "honor system"; a man who sees a fellow employee breaking one of the rules of safety first is justified in reporting him to the foreman.

The penalty of discharge for failure to wear goggles when so ordered is rarely necessary now; the men realize the value of this protection.

Burlap screens in certain places are used to protect passers-by from flying chips. Many serious eye accidents resulted from the use of "mushroomed" tools. The use of tools in this condition is strictly forbidden, and such tools are sent to the tool room for redressing.

After any serious accident, a special study of the case is made by the safety department, and ways and means to prevent the recurrence of such an accident are

* Read before the Section on Ophthalmology at the Seventy-Third Annual Session of the American Medical Association, St. Louis, May, 1922.

presented to the weekly meetings of the superintendents and foremen. At these weekly meetings the accident record of each department is reviewed, and any letdown in safety methods is soon discovered.

The study of light fixtures in a steel mill is not so important as in other industries. Modern indirect or

Fig. 2.—An eye was destroyed by the unguarded machine at the left; at right, plate glass guard in position. The unshaded light shown here is no longer used.

semi-indirect fixtures have been installed in the offices and other departments, as necessary.

The first aid station in this mill is in charge of a graduate nurse at all hours. A physician is on duty during the day and on call at night. A complete equipment of drugs and dressings is available for the redressing of minor injuries and for the treatment of serious injuries before they are sent to the hospital. All general cases are seen by the company surgeon or his assistants. All eye cases are seen by the company ophthalmologist. For some time the eye cases that the nurse or the physician on duty could not handle were sent to the ophthalmologist, either to his office or to the hospital. At this time such work was paid for on an individual case basis.

Numerous defects were soon found in this method of handling the cases. Too often the unskilled attempts to remove deeply embedded foreign bodies did more damage than good. Sometimes serious cases, such as steel in the vitreous, were not recognized for several days. The amount of time lost in minor eye injury cases seemed too high in proportion to other injuries. Employees sent from the mill to the office or to the hospital for treatment would be away from work for hours; and, as these men are paid by the hour, the loss was considerable. The records were so divided that it was almost impossible to check up cases and discover delinquents. These, with many other defects, caused us to make a change in the system for the treatment of eye cases.

By far the greater part of industrial ophthalmology deals with the treatment of minor injuries, of which the majority are foreign body cases. Although the severe injuries and their treatment are the most interesting phase of industrial ophthalmology, the most important part of the work is the treatment of the minor injuries. The care of these patients involves several important factors. The method of handling this type of case must take into consideration the fact that nurses and general practitioners are not expected to make a close diagnosis or to remove deeply embedded foreign bodies. Nor is it possible to have an ophthalmologist present at all hours. We have found that when the foreign body cannot be removed with a cotton swab, the patient can be made comfortable by instillation of phenacain (holocain) or butyn solution, mercuric chlorid ointment and a patch.

The ideal method of handling such cases would be to have the foreign body removed at once. We have found it impossible to do this, and so have chosen the lesser of two evils. No bad results have been seen from allowing the foreign body to remain in situ when treated as above, nor do the men complain of pain. After being so treated, the man is allowed to return to work and is given some type of work suitable and safe for a man wearing a patch. He is then seen at the next visit of the ophthalmologist, when the foreign body is removed. In these cases it is found that not only the foreign body but also all stained or devitalized corneal tissue must be removed. Unless this is done, the eye remains irritated for some days and is more liable to ulceration. In all cases in which the corneal epithelium is broken, mercuric chlorid ointment is instilled and a patch placed over the eye. This patch is worn for the

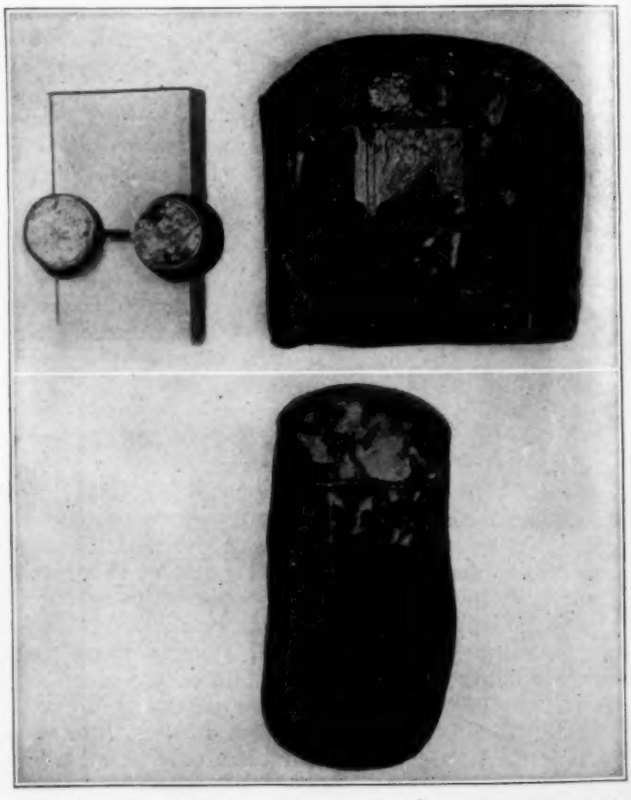

Fig. 3.—Above, goggles and mask after explosion of molten babbitt metal; below, mask that saved both eyes in explosion of babbitt metal.

next twenty-four hours, when the eye is inspected by the ophthalmologist and, as a rule, it is found that no other treatment is needed. I believe that the occlusion of such eyes for twenty-four hours is of great value, and that it plays an important part in the prevention of corneal ulcers.

We have found that sending such men to either the hospital or the office is less satisfactory and more

expensive than having them report at the first aid station at a definite hour each day when the ophthalmologist is present. With little clerical work a record can be kept covering the type of injury, treatment given, number of treatments and date of next visit. In this way delinquents can be checked up easily and sent

Fig. 4.—Chippers wearing goggles; the burlap screens have been removed while photograph was being taken.

in for treatment. At each visit a card is given the patient telling him the day and hour he is to report for further treatment. This "come-back" card is turned in when the treatment is given. Less than 0.1 per cent. of such patients fail to report on the day and hour mentioned. Success in having men report promptly for treatment of injuries and for redressings depends altogether on a wide-awake safety department and on educating the superintendents and foremen to an understanding that such promptness is essential. Less than 0.5 per cent. of the patients came for treatment one day after injury; 0.3 per cent. came the second day, and 0.3 per cent. came three or more days after injury. Comparing these figures with those in a recent report in which 43 per cent. were seen one day after injury, 18 per cent. the second day and 22 per cent. waited three or more days, we can see the very small percentage which efficient safety first work has given.

With the methods outlined above, corneal ulcers developed in only seven cases, five of them in men reporting from three to eight days after injury; two of these cases developed in men who had been to the first aid station but failed to report for further treatment as ordered. In no case has a corneal ulcer developed when the men followed the orders and treatment as given.

In other industrial work of the same kind in which this system is not carried out, I find 400 per cent. increase in the number of corneal ulcers.

By reason of the mandatory wearing of goggles and the use of the various other safety devices, major injuries of all types are rarely seen by us now. In the five years covered in this report, only forty major injuries occurred.

In all cases in which the history of the accident or the appearance of the injury is such that an intra-ocular foreign body is suspected, a roentgen-ray localization is invariably made. If the foreign body is behind the lens, the magnet extraction is done through a scleral incision. In these cases, even though the vision is good for some few months afterward, we find that the great majority sooner or later lose their vision, usually as the result of a low grade choroiditis, so that a guarded prognosis must be given.

In cases in which the eyes are burned—either by hot metal or by acid—the man is sent to the hospital at once, even if it at first appears to be a minor burn. We have found that no prognosis could be made for the first twenty-four hours, for even severe cases often appear to be of minor import at first. We have found that, in cases in which the corneal or pericorneal tissues are burned, atropin can be used only with great care, as glaucoma at times sets in.

In the treatment of corneal opacities following injury, we find that the long continued use of ethylmorphin hydrochlorid (dionin) in some form gives almost unbelievable results. We have observed vision reduced to 6/30 improve to normal as the corneal haze disappeared from the persistent use of this agent.

No adequate protection that is practical has been found for those exposed to electric flashes. We find that in these cases the symptoms of photophobia, lacrimation, etc., persist for about twenty-four hours in spite of any treatment. The instillation of phenacain in aqueous or oily solution gives more relief than any other measure. No permanent effects from such cases have been demonstrated. This coincides with the facts brought out recently by Verhoeff and Bell. We do find, however, that the symptoms are more severe and prolonged in men who have previously suffered with electric conjunctivitis.

The care of injuries is not the only duty of the industrial ophthalmologist. Many nonindustrial eye conditions are also seen. Some years ago an epidemic of trachoma broke out, but was soon under control,

Fig. 5.—Inferior method of protection in emery grinding; goggles are much better than a shield.

and one or two cases of trachoma are found each year. Such patients are put under treatment and furloughed until the infectious stage is passed. They are then allowed to work, but must report to the ophthalmologist every month for inspection.

From these observations, I believe that the most important part of industrial ophthalmology is the prevention of accidents and the treatment of the minor

injuries. The figures given prove that such care will reduce the number of corneal ulcers to a minimum. The treatment as outlined will also return to work in the shortest possible time all the employees who have had minor injuries.

The next step to be taken in industrial ophthalmology is the refraction under cycloplegia of all employees, and furnishing them with the proper correction. The increased efficiency of the men will, it is believed, more than compensate the employer for the expense involved. I recently found in an examination of railroad employees that 10.5 per cent. had subnormal vision to such an extent that it made them unfitted for their occupation. No doubt the percentage of visual defects in mill workers would be much higher than among railroad employees.

CONCLUSIONS

1. Severe injuries to the eyes can be greatly reduced by educating the employees, and by the compulsory use of goggles and other safety devices.

2. Some such method as outlined for the care of minor injuries is essential, and will reduce the amount of lost time to a minimum. This method will almost eliminate the occurrence of corneal ulcers.

ABSTRACT OF DISCUSSION

DR. GEORGE H. CROSS, Chester, Pa.: The most important part of the work of the industrial ophthalmologist is the prevention of eye injuries. Glance at the accident reports of concerns employing large numbers of men in the so-called metal trades and note the proportion eye cases bear to the whole number of injuries. In one plant in my city there were, during 1921, a total of 13,008 accidents of all kinds. Of these 5,843, or 44 per cent., were eye injuries. In a second plant, in the last eleven months, there were 3,893 accidents of all kinds, of which 2,000, or 51 per cent., were eye injuries. A factor in this percentage of eye cases is the rule which prohibits any employee touching a fellow employee's eye, and requires in all cases, even dust in the eye, that a report be made to the first aid for examination and treatment. A deplorable practice in some plants is that of telling a man with an eye injury to "go see his family physician." These cases generally require longer time to recover, sustain more damage to the corneal tissue, and are more prone to ulcerate than those treated by an ophthalmologist. I am fully in accord with Dr. Van Kirk in believing that the greater part of the routine of the industrial ophthalmologist is the treatment of minor injuries, and as evidence of the value of constant efforts to educate men to report to the first aid hospital, in one plant, in 1921, 536 men applied for removal of a foreign body or for minor injury, in whom no foreign body or injury was found. The eye, however, was flushed, and the man was relieved. In clearing opacities of the cornea, ethylmorphin hydrochlorid (dionin) is certainly an excellent and valuable remedy. The physician is an important factor in building up the morale of the men and helping to establish and maintain cordial relations between employer and employee. The mind of an injured employee with a family to support, and on a reduced income, suffering pain and discomfort, is a fertile field in which may be sown the seeds of rebellion and anarchy. The most illuminating evidence on the value of the cooperation of ophthalmologists with captains of industry is contained in the Hoover report on "Waste in Industry," published last fall. Dr. Van Kirk refers to the education of employees in safety matters. I am firmly convinced that this education should start with the president of the company and include every person on the payroll.

Fig. 6—Man with broken goggles and chip of steel; a good picture for a bulletin board.

DR. ALBERT C. SNELL, Rochester, N. Y.: In the technical schools throughout the country we do not educate pupils and instructors in the use of the various kinds of ocular protection. In the Mechanics Institute in Rochester there have been serious accidents to the students that might have been prevented if they had had proper protection. The example of wearing protecting apparatus would have an educational value. We ought to teach these men in the technical schools the proper protective methods so that when they go into the factories they will be properly trained in the correct methods of using ocular protection against injury.

DR. JOHN A. DONOVAN, Butte, Mont.: Of course, immediate treatment is ideal. I recently saw a case in which the sight of an eye was lost from a foreign body, because the injury was unattended three days. Our miners are now returning to work after a year's shutdown, and accidents are numerous with new men. We should give more time to first aid in their training. Long ago, the Cornishmen in the Pennsylvania coal mines, for their mutual benefit as workers, began a first aid, or rather safety first, campaign on account of the contributory negligence law. In 1910, the United States Bureau of Mines was organized. Six years ago, the A. C. M. Company of Butte organized safety first work. It is spending more than $100,000 a year, and now results show 200 fatal accidents out of 2,005 total accidents in sixteen and a half million working shifts, being at the rate of one death in 272 years: one accident in twenty-six years, if applied to one man. The loss of working time is reduced 65 per cent. The causes are: (1) forgetfulness; (2) carelessness, and (3) negligence. The first two are curable, but negligence is chronic. Our Boy Scout is a trained safety first man. I ask your interest in their behalf. The coming generation will be able to teach us safety first and first aid.

DR. GILBERT E. SEAMAN, Milwaukee: If we are really interested in the prevention of eye injuries, our chief problem is education of the men in charge of industry. It has been my observation that, in the matter of the use of preventive measures, it is up to the men in charge of the plant. The men will wear protecting goggles and resort to other means of protection if it is a requirement of the plant, and it will only be effectively a requirement when it is shown to the men in charge of industry that it is a measure that will save money. A protective device is a matter of economy. In the railroad shops in our city, although we have been talking this matter of protection for many years, there is still a

great deal of negligence, and we usually find that the difficulty is that the man just then responsible has not been impressed with the fact that it is a measure of economy. During the last year, we have been using butyn as an anesthetic almost to the exclusion of cocain, and it seems to me with fewer infections; I suppose on account of the fact that it does not disturb the cornea to the extent that cocain does.

DR. ALBERT E. BULSON, JR., Fort Wayne, Ind.: I want to emphasize what Dr. Donovan said about the instruction of heads of departments and those managing the large concerns in the effectual carrying out of first aid methods. I think attention also should be called to the fact that sometimes the first aid stations are at fault. I speak with some emphasis concerning this as I have had occasion to call the attention of first aid stations to this negligence. I refer particularly to the class of injury in which there is not a foreign body in the eye, but in which there is an abrasion of the cornea which is very painful and which is not discovered at the first aid station. I want to make a plea for the instruction of nurses and those who first see these patients that, after flushing out the eye, fluorescein should be used in every case. Many of these abrasions, if neglected, result in ulceration, but if fluorescein is used the nurse can determine the presence of a break in the epithelium. I recall a number of cases in which complications have occurred due to negligence on the part of the first aid station in not discovering a corneal abrasion. On the other hand, when first aid employees are instructed, we have seen fewer complications from injuries. Another thing is the necessity for having these employees keep the eye covered for the first twenty-four to forty-eight hours after removal of the foreign body, or after an abrasion of the cornea has been determined by fluorescein. I think nothing is so helpful in the prevention of infection as keeping the eye covered. I am aware of the fact that some men treat these injuries in an open manner; but you will make the patient more comfortable and keep out other infection by bandaging the eye. It has been my custom to put in mercuric chlorid salve and cover the eye in virtually every case of injury from industrial plants, and the number of subsequent corneal ulcers and other complications have been greatly lessened in consequence.

DR. FREDERICK T. HYDE, Port Angeles, Wash.: A number of speakers have mentioned the matter of educating the managers. It is also our duty to teach the general practitioners that they should not attempt to remove foreign bodies from the eye. Many of our large institutions have contract surgeons. All their work is done by these surgeons, who do not refer the eye cases to ophthalmologists, but frequently do a great deal of damage by trying to remove foreign bodies from the eye. Another thing, they are not qualified to recognize abrasions; consequently these are not properly taken care of and go on to ulcerative formation.

DR. LEWIS H. TAYLOR, Wilkes-Barre, Pa.: I am impressed with one thing Dr. Cross said—that the employee should not touch the eye, but should go immediately to the first aid station. If he had also said that at the first aid station they should not touch the eye it would be still better, unless at that first aid station a trained ophthalmologist is in charge. I have a great many cases of industrial accidents from the mines, as I live in a mining country. I agree with what the author said about the use of atropin. I use it in many cases. I believe also that when we have taken out a foreign body we should always use fluorescein, and also use it in cases of burn. The great difficulty we have to contend with is the lack of education on the part of those who are in charge of such patients at the time of the injury. The worst cases we have to deal with, as a rule, are those that have received first aid at the mines, where an attempt has been made to take out the foreign body and part of it has been left. If such a plan as suggested by Dr. Bulson could be carried out it would be helpful, but I believe the great point is to teach the people that however slight the injury may be, an eye case should be referred at once to an ophthalmologist, who is to be held responsible.

DR. FRANK S. AUTEN, Belleville, Ill.: We have many of this kind of cases, and the first aid is too often of very little aid. After I have removed a foreign body, cleansed the eye and put a bandage on it, I have the patient return the next morning. That is a hard thing to do, but you can train them. I think three fourths of the men I see come back the next morning. I remove the bandage myself, and then I use fluorescein and see whether the injury has been covered by epithelium. But I want them to come back the next day by all means. I think that is a precaution well worth noting. You can thus prevent many serious ulcers.

DR. J. W. CHARLES, St. Louis: I agree with what has been said about the use of fluorescein, and also about the use of a bandage in these industrial cases. Certainly, a wounded eye has less resistance to disease germs when it is open than when it is closed. I remember one case in Dr. Ewing's office in which a country practitioner had removed a cinder from the cornea. Having been hot, it did not carry in a germ; he had released the patient after the removal of the cinder, without using a bandage or using antisepsis and the eye was lost from bacillus pyocyaneus infection. I think we need a campaign of education for the general practitioner as well as for the captains of industry.

DR. W. R. THOMPSON, Fort Worth, Texas: When corneal epithelium has been lost, the use of hot applications for five minutes after removal of the foreign body will relieve the patient of pain, encourage the healing process, and if a bandage is kept on for twenty-four hours there will be no corneal ulcer.

DR. GEORGE F. KEIPER, LaFayette, Ind.: One statement was made by Dr. Van Kirk with which I can hardly agree. I cannot bring myself to the point of being willing to let a foreign body remain in the eye when its removal is so easily obtained, as a rule. In fact, the quicker it is out of the eye the better it is for the patient, and for the corporation for which he labors. If it is embedded in the cornea, every movement of the eyeball or lids scratches the lids, irritating them mightily. Moreover, nature immediately institutes measures to rid the cornea of the embedded foreign body, and if given time enough will get rid of the offender by ulcerating it out with resultant damage to vision, the amount depending on the location of the foreign body in the cornea. But such embedded intruders should be removed by competent ophthalmologists, and not by the nurse in charge of the first aid station in the plant. Waste no time at all. Have the patient sent down to the office of the company's ophthalmologist. It is money in the pocket of the injured employee thus to be treated, to say nothing of the comfort it brings him. Besides, the liability of the corporation is reduced. After the removal of the foreign body, it is best to close the eye with a well fitting bandage, or the patient will declare that it is still there and pester you to search the eye for its supposed presence. If the foreign body is intra-ocular and magnetizable, the quicker out the better, after its location has been determined by roentgen ray. Yet we all have seen patients who have carried such foreign bodies for a considerable time with impunity, to have them removed later with the giant magnet. A number of years ago, I reported a case wherein the foreign body was carried for twenty-seven years in the iris, with no damage to vision. Corporations are not soulless. They are sympathetic; they desire that their injured employees be back to work as soon as possible after injury and in the meantime be made as comfortable as possible. Some aspersions have been cast at the efficiency of the first aid station. If one's first aid station is not efficient, that is a reflection on oneself. One ought to see that it is made effective.

DR. RUFUS JACKSON, Baton Rouge, La.: About two weeks ago, I saw a case of pyocyaneus infection three days after it had been seen at the plant, and an effort had been made to remove the foreign body, which was apparently successful. At the time the man came, he was complaining of some pain and discomfort, but there was no evidence of advanced infection of the cornea; that is, one would think on examining the cornea that it was nothing more than a foreign body that had been incompletely removed three days before. He had moderate injection of the conjunctiva, and we used antiseptics and sent him home. He had pain all day. We took a smear of the eye and cultivated it. He came back the next morning with the eye well on the way to destruction. We had not been able to identify the bacteria from the smear,

and by the time we got the returns from the culture the man's eye had been destroyed, in just thirty-six hours. The infection had simply circled the cornea. The pathologist asked if this man had had any boils, and on inquiry I found he had a small boil on the side of his neck. Hereafter, I shall look for boils as well as treat the eye.

Dr. V. E. Van Kirk, Pittsburgh: Dr. Cross thought the percentage of eye injuries is high. Men must be educated to report to the first aid station even for the most minor type of injury. We instruct them to come in, and if no foreign body is found, they return to work immediately. As to education, we see a great deal in the newspapers about "no accident" races between departments. We have found this is not a very good thing because men get so interested in having their department make a good report that they fail to come for treatment. In educating the foremen, we find the most valuable means is weekly shop meetings. There the accident reports of the departments are gone over. A safety engineer will tell them when the accidents are getting too high. The history of safety work as mentioned by Dr. Donovan is a romance. I worked in the mills when I was a boy when there was no such thing as safety first. Accidents were usually taken care of by a clerk or by the night watchman. In fact, I was guilty myself of trying this work, although I had no knowledge of what I was doing. Negligent workers should be discharged, and complete examination made to find out why a man has so many minor injuries. The importance of using the pad for twenty-four hours cannot be overestimated. The men on their discharge from the hospital are given a "come back" card showing the day and hour they are to report back to the first aid station. No department is allowed to keep a man at his work and prevent his reporting.

HEART CLINICS FOR SCHOOLCHILDREN

A PRELIMINARY PAPER *

HARRY B. SCHMIDT, M.D.
DETROIT

It has been a year since the survey of Detroit schoolchildren for organic heart disease was first undertaken. These children, numbering about 148,000, were first examined by their school physicians. Of the 148,000 children examined, 1,373 were found to have some cardiac defect at the first examination. Later the 1,373 children were carefully studied and classified under the classification recommended by the Society for the Prevention and the Relief of Heart Disease:

Class 1. Patients with organic heart disease who are able to carry on their habitual physical activity.
Class 2. Patients with organic heart disease who are able to carry on diminished physical activity.
A. Slightly decreased.
B. Greatly decreased.
Class 3. Patients with organic heart disease who are unable to carry on any physical activity.
Class 4. Patients with possible heart disease.
Class 5. Patients with potential heart disease.
Class 6. Those having no heart disease.

Of necessity it will require several years to determine what alterations and corrections may have to be made in our history sheets and records of these children; in some instances it may be necessary to change from the first classification to another. A study of our statistics shows that less than one per cent. of Detroit schoolchildren have organic heart disease, which corresponds well with the recent statistics demonstrated in other large cities. Approximately one half of the children suspected of having heart disease had signs which were abnormal but which were not believed to be due to disease. Of these, about 60 per cent. had functional heart murmurs, and the remaining 40 per cent. had respiratory arrhythmia. Whenever there was a question in the diagnosis, the child was reexamined. In addition, the occurrence of rheumatism and chorea was carefully considered in arriving at a diagnosis in each case. Of the children who had murmurs without other signs of abnormality, fully 90 per cent. had soft, blowing, systolic murmurs either at the base or at the apex of their hearts. We should emphasize the insignificance of systolic murmurs in healthy individuals. We really know very little about the causation of such murmurs; besides, there is too much confusion as to what constitutes a functional murmur and what is its significance. Furthermore, there is little justification in holding that all murmurs are organic because certain of them have been found to be associated with valvular heart disease.

We can exclude aortic insufficiency and almost all other organic heart lesions from consideration, and confine ourselves to mitral disease in counting our mistakes in the diagnosis of valvular heart lesions. The reason for this is easily explained. Functional murmurs are invariably systolic in time, and, unhappily, so is the murmur of mitral insufficiency.

Also it has been shown by Yandell Henderson and Carl Wiggers that the first part and muscular portion of the mitral first sound is crescendo in character and may easily be mistaken by any one for the murmur of mitral stenosis when for any reason the heart is excited and the first sound is accentuated. We have had a number of such cases in the clinic.

In arriving at a decision as to cardiac compensation or decompensation in any given case, the orthodox method of examination, i. e., that of stair climbing and blood pressure studies, was not used. The reason for this is quite obvious: A child's heart is extremely susceptible to stimuli of all kinds, often reacting to the least excitement under almost any provocation. We therefore have depended more on the history and on the reaction to graduated exercises over a much longer period of observation.

For purposes of study, a group of twenty-eight children was segregated at the Russell school in an open air room furnished with Kalamazoo chairs. Aside from their regular study, these children receive one-half hour of graduated exercises with dumb-bells under the supervision of a competent teacher twice each day. Also, they receive nourishment consisting of milk and graham crackers in the morning and afternoon of each day, following which they are required to rest in their reclining chairs for a period of about half an hour. Many of these children fall asleep and are not disturbed, wakening of their own accord.

We have found it difficult to control the exercises of children with heart disease outside of school hours. On inquiry, many of these children have confessed that they take more strenuous exercise outside of school, and it was only recently that one of our star patients stayed out of school one day to do the family wash. However, the exercises given in the school will check the symptoms which foreshadow heart failure, in which case measures may be undertaken for more firm control in each particular instance. Also, we feel that the particular danger to which children with cardiac disease are exposed is from infection rather than from excessive exercise. There seems to be

* Read before the Section on Public Health, Michigan State Medical Society, Flint, June 9, 1922.

among the laity as well as among physicians an unwarranted fear of exercise for children who have heart disease. This attitude among physicians may be explained in part by the old conception that cardiac failure was due to a mechanical factor. So far in our experience exercise has been of great benefit to these children, many of them improving remarkably, not only where their hearts are concerned but also in weight increases and in their physical appearance and posture.

When we consider that more than 2,000,000 people in the United States suffer from heart disease, and that a large proportion of these people give a previous history of rheumatism or chorea, it can be seen that great benefit will be derived from measures adopted toward prevention of these two diseases, which are so common in childhood and adolescence. We must therefore of necessity begin with the child, and there is no better place for this campaign of education and investigation than in the schools throughout the United States. Heretofore we have thought of heart disease in children in terms of heart disease in the adult. It must be obvious to any one that the growing heart of a child is essentially different from the mature heart of the adult, and we may predict that such studies as are now being carried on in all the larger cities in the United States by the Society for the Prevention and Relief of Heart Disease will in the future disclose some very interesting facts, perhaps heretofore quite unknown.

Children with heart disease can be taken care of effectively in any open air schoolroom with other children suffering from divers conditions, especially malnutrition. And, in addition, cold fresh air is beneficial to children suffering from heart disease, provided they are dressed with the proper light and warm clothing, and have sufficient covering during the rest periods. The exercises to be taken may be given along with the exercises of the other children in the school. The physical culture teachers should be instructed to look for symptoms signaling cardiac distress. These symptoms are precisely the same symptoms that any person suffers when he performs work beyond his heart's capacity.

Our observations so far have taught us many interesting things in relation to heart disease in general. The examination of a heart supposed to be the seat of disease is no mere academic exercise, and it has not for its object simply the identification of a valvular heart lesion, however interesting such an investigation may be. The duty before us is to form an opinion of the exact condition of the heart, and especially as to the structural integrity of the heart muscle and its functional efficiency. It is only by a thorough knowledge—not simply of the existing state of the valves and the muscles of the heart, but also of the processes by which a given lesion has been reached, and of any tendencies, favorable or adverse, which are in operation, whether as a result of the affection of the heart or arising out of constitutional conditions—that we are in a position to advise the patient as to what restrictions are necessary. These studies have demonstrated that progressive cardiac failure is usually due to an infectious process in the heart itself, and this idea has been sufficient to indicate the importance of eradicating any foci of infection which may be present elsewhere in the body. Such a procedure may in the future prove to be the most efficacious measure we possess for preventing cardiac failure in schoolchildren.

Fig. 1.—Placing antigen in tube.

A RING OR CONTACT PRECIPITATION TEST FOR SYPHILIS

A MODIFICATION OF THE KAHN TEST *

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Several precipitation tests for syphilis have been described recently, the latest and simplest being that of Kahn.[1] At present I wish to describe briefly a modification of Kahn's test by using the ring or contact method employed with success in the work on specific precipitins in this institute during the last several years.

This ring or contact test for syphilis may be made as follows: A small amount, say 0.1 c.c., of cholesterolized antigen prepared as described by Kahn, diluted 1:12 with physiologic sodium chlorid solution, is placed in a small glass tube, about 0.5 mm. in diameter and from 3 to 4 cm. in length, by means of a pipet (Fig. 1); approximately the same quantity of the serum to be tested, undiluted and unheated, is then introduced slowly in another pipet at the bottom of the tube so that a precise line of contact forms between the serum and the antigen solution. The appearance of a white ring of precipitate (Fig. 2) at the contact of the serum and the antigen is considered a positive result. The companion tube in Figure 2 shows a negative reaction. In all cases the result is more easily read against a dark background, which is true also of all ring precipitin tests. A control test of serum and salt solution is to be made with each serum, and positive and negative serum controls should be used in testing each lot of antigen dilution. As in other ring precipitin tests, the final readings are taken after one hour at room temperature. Usually, however, the precipitate appears within a few minutes in the majority of strongly positive serums.

The antigen I have used was obtained from Dr. Kahn, and made from swine heart as described by Neymann and Gager [2] and by Kahn.[1] The antigen for the series of tests in the accompanying table was diluted according to the method described by Kahn by placing 1 c.c. or less of antigen into a tube about 1.5 cm. in diameter, and physiologic sodium chlorid solution equal to three times this amount in a 25 c.c. cylinder. The salt solution is then poured into the cylinder containing the antigen, and the solution is mixed as quickly as possible. One portion of this mixture was used for the tests by the Kahn method; to the other part, which was used for the ring test, was added physiologic sodium chlorid solution sufficient for a dilution of 1:6,

* From the John McCormick Institute for Infectious Diseases.

1. Kahn, R. L.: A Simple Quantitative Precipitation Test for Syphilis, Arch. Dermat. & Syph. 5:570 (May) 1922.

2. Neymann, C. A., and Gager, L. T.: A New Method for Making Wassermann Antigen from Normal Heart Tissue, J. Immunol. 2:573 (Oct.) 1917.

and then more physiologic sodium chlorid solution for a final dilution of 1:12. The purpose of the dilution is to avoid precipitation by the alcohol in the antigen and to obtain as clear a fluid as possible. More recently, the required amount of salt solution for the final dilution of 1:12 has been measured into a 10 c.c. cylinder, and one twelfth of this amount of antigen is added with a graduated pipet and quickly mixed by blowing through the pipet. There appeared to be no

COMPARISON OF WASSERMANN AND PRECIPITATION REACTIONS

Number of Serums	Wassermann	Kahn	Ring Method
56	++++	++++	Positive
177	0	0	0
4	Anticomplementary	0	0
1	Anticomplementary	++	Positive
1	++	Doubtful	Positive
1	+++	++	Positive
1	+	0	0
1	+	++	Positive
1	0	+	Positive
1	0	0	Doubtful

difference in the results by the two methods of mixing, as indicated by parallel tests of a number of serums. The stability and appearance of the antigen dilution are influenced, however, by the rapidity of mixing; and the size of the tube used is an important factor. A good antigen dilution remains stable, that is, free from spontaneous precipitate, for not more than three or four days if kept in a dark place at about 75 F. Special efforts should be made to produce a stable antigen that can be used at any time.

The comparative results of the Wassermann and of the Kahn and ring precipitation test of 244 serums are given in the table, which shows that all tests agreed in

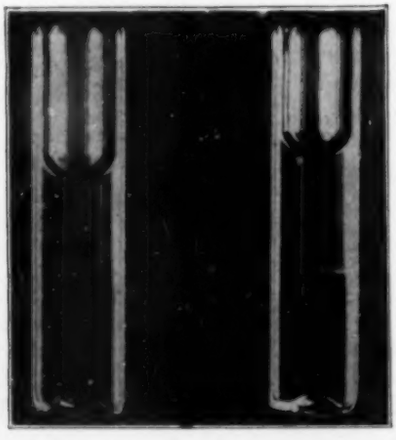

Fig. 2.—Positive ring test in tube at right; negative at left.

95.5 per cent. of the serums, which gave forty-six positive and 177 negative reactions. The reactions of the remaining eleven serums are given in detail; five serums were anticomplementary, but the two precipitation tests gave the same results; of the other six serums in the tests in which there was some discrepancy, four gave positive Wassermann reactions in low degree, and in all the two precipitation tests corresponded fairly well. The antisheep system was used in the Wassermann tests with cholesterolized and acetone insoluble antigens.

A quantitative test may be made by simple progressive dilution of the antigen; a large number of progressive dilutions in small tubes can be made quickly by using a small board with rows of holes, as shown in Figure 3. In view of the short time before final readings are made it is required only that the tubes and pipets be absolutely clean but not necessarily sterile. Several 4-plus Wassermann serums have given positive precipitations with antigen dilutions between 1 to 50 and 1 to 200.

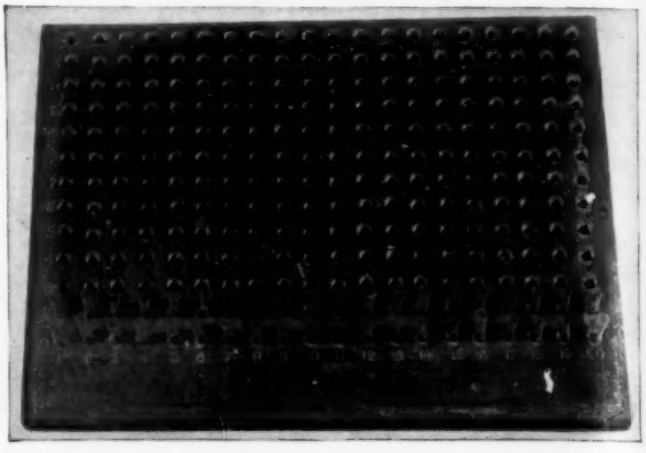

Fig. 3.—Board with rows of holes for progressive dilutions of antigen in making quantitative tests.

The extension of the precipitation test to exudates and other fluids is, of course, perfectly possible. In one case the serum exuding from a suspected gumma was taken up with a capillary pipet and tested by placing it in contact with diluted antigen; a positive reaction developed at once, which was confirmed by a positive Wassermann reaction of the blood serum.

The extreme simplicity and sensitiveness of the ring test may make it a valuable adjunct to the Wassermann test. The small amount of material and the simple apparatus needed help to render it available for physicians in general. As stated, no incubation is required. So far there appears to be uniform agreement in the results with the three tests in the table of clearly positive and negative serums. The final determination of the value of the ring test can be found only after a large number of tests have been made especially with what may be termed borderline serums, giving doubtful results with the Wassermann test.

Percentage of Oxygen Necessary in Air.—The gas in air most important to man is oxygen. Man has adapted himself to the normal amount, about 21 per cent., and does best when the air contains about that proportion. Yet he is able to live and work, though not so well, when there is a less amount. If the air contains about 17 per cent. of oxygen, a man at work will breathe a little faster and a little deeper—about the same as when he first goes from sea level to an elevation of 5,000 feet. When the amount of oxygen in the air has been decreased to 15 per cent., many men so exposed become dizzy, notice a buzzing in the ears and a rapid heart action, and frequently suffer from headache. Very few men escape these symptoms when the percentage of oxygen falls to 10 per cent. Under certain conditions consciousness may be retained even with as low as 3½ per cent., according to Haldane. However, under other conditions, consciousness may be lost at 9 per cent. or above. The flame of a candle or Wolf lamp is extinguished when there is 16½ per cent. of oxygen or less, and the flame of a carbide or acetylene lamp is extinguished when there is 13 per cent. or less.—*Reports of Investigation, Bureau of Mines,* August, 1922.

THE SHEPPARD-TOWNER ACT IN RELATION TO PUBLIC HEALTH *

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The Sheppard-Towner act provides for the current fiscal year (1922) $10,000 for each state accepting the provisions of the act, and an additional sum of $1,000,000. Of this additional amount, not more than $50,000 is to be used for federal administration, and the remainder is to be apportioned to the states and granted if matched dollar for dollar by state appropriations—$5,000 to each state, the remainder to be apportioned on the basis of population.

After the present fiscal year the authorized annual expenditure is $5,000 unmatched to each state and, to be matched dollar for dollar, an additional $5,000 plus a prorated amount of the remaining $710,000 of the additional $1,000,000, after a maximum of $50,000 has been deducted for federal administration.

The federal board was changed from a board advisory to the Children's Bureau to the Federal Board of Maternity and Infant Hygiene, composed of the chief of the Children's Bureau, the Surgeon General of the U. S. Public Health Service, and the Commissioner of Education. The board is given authority to approve or disapprove the plans submitted by the state, and to withhold further certification of the federal funds to a state if the money is not properly expended.

While certain desirable but minor provisions of the act have been omitted, and a few new stipulations added, the original purpose of the bill remains unchanged in that provision is made for federal aid to the states, administered through the Children's Bureau, for the purpose of reducing the maternal and infant mortality and protecting the health of mothers and infants, the states having complete authority to initiate plans for approval by the federal board.

NEED AND AIMS

This bill was the direct outgrowth of the series of investigations on maternal and infant mortality made by the federal Children's Bureau during the nine years of its existence. These investigations, besides dealing with the social, economic, industrial and civic conditions surrounding mothers and infants, reveal a morbidity and a mortality which, authorities agree, are to a great extent preventable.

The need for public protection of maternity and infancy, revealed by the reports of the bureau, has recently received confirmation in the report of Dr. William Travis Howard [1] of the Johns Hopkins School of Hygiene. He summarizes thus:

> The relatively highly developed knowledge concerning practical obstetrics is so meagerly diffused and so ineffectively applied to practice, that certainly in the registration area of the United States it is not brought to bear with sufficient force to prevent the occurrence of innumerable major and minor illnesses and a large number of unnecessary maternal deaths.

* Because of lack of space, this article is abbreviated in THE JOURNAL. The complete article appears in the Transactions of the Section and in the author's reprints.

* Read before the Section on Preventive and Industrial Medicine and Public Health at the Seventy-Third Annual Session of the American Medical Association, St. Louis, May, 1922.

1. Howard, W. T., Jr.: Real Risk-Rate of Death to Mothers from Causes Connected with Childbirth, Am. J. Hyg. 1: 197 (March) 1917.

PRESENT STATUS OF THE ACT

Anticipating the enactment of the maternity and infancy bill, six legislative acceptances were effected prior to its final passage. One of these acceptances was good only in case the pending federal act was passed without change, and another was technically inadequate. One state accepted the act at a special session of the legislature in 1921. Of the eleven state legislatures having regular sessions in 1922, seven have accepted the act, and four—Louisiana, Massachusetts, New York and Rhode Island—did not accept its benefits. Hence, to date, a total of twelve states have accepted through legislative action. The New York legislature, though refusing to accept the act on the ground of paternalism, increased by $130,000 its previous child hygiene appropriation of $30,000 and created a division of maternity and infancy. Such action demonstrates the desirable stimulation which may be effected through federal aid.

Provisional acceptances of the act have been received from the governors of thirty states, pending the next regular sessions of their legislatures.

The funds authorized by the act did not become available until late in March. The federal board at its first two meetings, April 18 and May 5, approved plans submitted by thirty-three states. In order that actual state work might begin at as early a date as possible, these initial plans were approved along very broad and flexible lines, attention being called to the fact that such action did not establish a precedent as to future plans. The scope of the activities contemplated varied in each state according to local conditions, and was dependent on previous local developments in the field of child hygiene.

Such general, but nevertheless fundamental, projects of maternal and child hygiene as accurate birth registration, improved milk supplies, and state surveys of the medical and nursing facilities for maternal and infant care, appeared frequently in submitted plans. These were approved in the initial plans because of the realization that gradual readjustments are necessary in forward-looking programs which eventually will concentrate on the problems more specifically concerned with maternity and infancy. Unprecedented attention to the registration of midwives, as well as to their training and supervision, is contemplated in many states in which previously this problem has been entirely ignored. In states with well-organized child hygiene divisions, where the necessary pioneer stage has been passed, the increase in the numbers of county or community public health nurses whose duties are to be extended to include surveys of facilities for maternity care, and prenatal and postnatal instruction either in classes or in the home, promises marked strides toward the end to be attained. State and district supervisory prenatal nurses are in several states an innovation which will promote uniform educational standards and technic.

SPECIAL PROBLEMS ON WHICH ATTENTION SHOULD BE FOCUSED

Mortality rates, both maternal and infant, are probably our most reliable indexes of progress in raising general health standards. In 1915 the infant mortality rate in the United States birth registration area was 100 per thousand births and the maternal mortality rate 6.1. In 1920 the infant mortality rate had fallen to 85.8, but the maternal death rate was 8. The total

number of maternal deaths in the death registration area in 1920 was 16,776.

While the infant mortality rate shows a satisfactory gradual decline during this period, with substantial decreases in deaths from the causes classified in the gastro-intestinal and respiratory groups, the mortality rates in the early infancy group, including deaths caused by premature birth, congenital debility and injuries at birth, show no substantial reduction. In the year 1915 the number of infant deaths during the first month of life was more than five times that of the last three months, and in 1920 it was still five times as great. Similarly, in the year 1915, the number of infant deaths during the first week of life was eight times that in the fourth week, and in 1920 it was nine times as great.

The greater part of these neonatal deaths are due to natal and prenatal causes, as shown in Chart 1.

In the study of state statistics, it is most illuminating to note the number of these early infant deaths for which no medical attendant is reported. Apparently the lack of recognition of the need for medical attention at this period corresponds somewhat to the lack of knowledge of the need and value of prenatal care for the mother.

The figures just given minimize the actual mortality rates, since stillbirths are not included. The inclusion of the records of stillbirths and their causes is important and highly relevant if adequate information is to be obtained as to the relation of prenatal and natal conditions to infant mortality. According to Census Bureau reports for 1918, the number of stillbirths recorded for the birth registration area, exclusive of three states and one city, was 48,634.

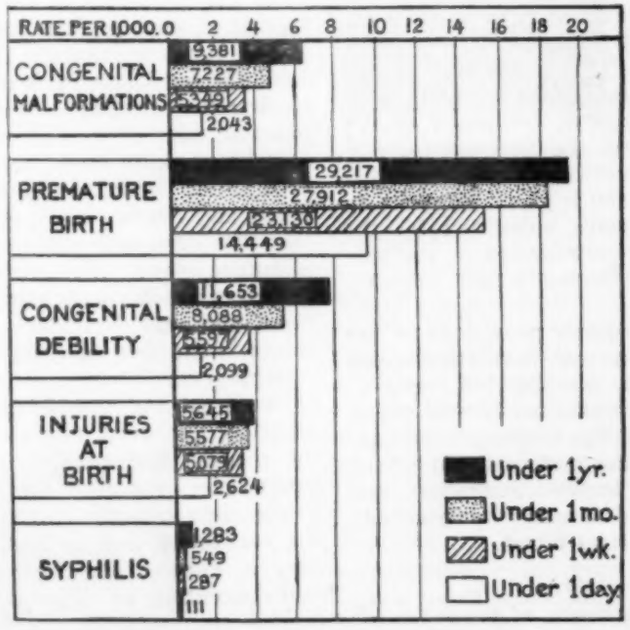

Chart 1.—Infant mortality from natal and prenatal causes in birth registration area, 1920.

There is no uniformity of definition or reporting in the various states with reference to the period of gestation which determines whether a child is stillborn. The model vital statistics law requires that separate certificates of birth and death shall be filed for a fetus which has advanced beyond the fourth month of uterogestation. While at present the standard birth and death certificate forms have been generally adopted, birth registration in only twenty-nine states and death registration in only thirty-seven states are sufficiently complete to entitle them to admission to the United States registration areas.

Maternal mortality rates show no improvement since 1900. The dominant cause of maternal mortality is puerperal septicemia, a condition known to be largely preventable. This means that modern knowledge of the causes and prevention of infection, as successfully applied to surgical practice, has not been applied to obstetric practice so effectively.

State supervision, through inspection and licensing of so-called maternity homes and institutions caring for infants, though generally recognized as essential, has to date received little effective attention, and offers a fruitful field for study of the problems connected with the hygiene of maternity and infancy.

A consideration of the information available in this country at present concerning midwives makes it apparent that one of the most important steps in the program for bettering conditions surrounding maternal care is an investigation to determine the actual numbers and qualifications of midwives throughout the country. This would logically be followed by the adoption of a policy for either training, licensing and supervising midwives, or providing adequate medical substitutes for them. The 1920 occupational report of the Census Bureau lists 4,473 midwives in this country; yet, as the result of a questionnaire sent out by the Children's Bureau in 1919, the number of midwives in each of a number of states was estimated as ranging from 1,000 to 7,000. In New York City alone in 1919 there were 1,612 midwives licensed and practicing.

In a statement made by Dr. Nicholson,[2] in 1921, he summarizes the information obtained through a questionnaire which he sent to the health officers of every state in the United States. "As far as can be judged from the replies received," he says, "New York (33 per cent. delivered by midwives in New York City), New Jersey, Connecticut and Pennsylvania are the only states at present attempting any real control of the midwife." Although a license to practice is necessary in twenty states, this so-called licensing is farcical in the great majority of instances, for several states, with considerable percentages of midwife deliveries, frankly admit that the midwifery law is not enforceable. The author points out that, in some states in which the percentage of midwife deliveries is very high, the control is in the hands of county officers and that nothing less than state control is really efficient in meeting the midwife situation.

The statement further cites conditions in states such as Kentucky, with 2,500 midwives, who are untrained and who deliver 20 per cent. of the babies in the state; and Virginia, with 7,000 midwives, untrained, who deliver 40 per cent. in the general population and 29 per cent. in the city of Richmond. Leaving out of consideration states in which the problem is evidently not a pressing one, Dr. Nicholson is doubtful whether any of the states requiring licenses for midwives exercise real control in any degree.

The extent of the problem of midwifery—the term being used in its broadest sense—is shown by what one state faces in its Sheppard-Towner plans with 6,000

2. Nicholson, W. R.: An Anachronism of the Twentieth Century, the Midwife, Nathan Lewis Hatfield Lectures delivered before the College of Physicians of Philadelphia, Lecture III, Feb. 18, 1921.

midwives, 3,000 physicians and between 60,000 and 70,000 births annually.

That the training, licensing and careful supervision of midwives is one method of attack on the problem has been demonstrated in a few communities in this country and in England.

Dr. S. Josephine Baker [3] writes:

> This satisfactory reduction of the maternal death rate from puerperal diseases in New York City (the rate for 1919 being 11.41 per 10,000 labors, as compared with 14.41, which is the combined rate for five years 1915 to 1919, inclusive) is believed by the department of health to be due to the administrative measures which have been carried out for the better protection of women during the puerperal period, and for raising the standards of obstetrics as practiced by midwives. Measures of this type have been carried out in New York City for the last twelve years and are considered by the department to be essential in any well-rounded public health program.
>
> Control of the practice of midwifery in New York City includes refusal to issue a license to any midwife who had not practiced in the city prior to 1907 unless she is a graduate of the Bellevue Hospital School for Midwives, which is maintained by the city of New York and has an eight-months course of instruction, or unless she is a graduate of an accredited European school of equal or higher standing. In addition, the Bureau of Child Hygiene carries on a systematic and widespread supervision of the practice of these women who, at the present time, report about 37 per cent. of all births. It can hardly be claimed that the general type of obstetric practice by physicians and the conduct of the lying-in hospitals of New York City are on a higher plane than obtains in Baltimore, Philadelphia or Boston. While there is no question that an advance in obstetric practice has been noticeable in the last decade, the fact still remains that New York is the only one of the cities of the United States mentioned in this report which has instituted and maintained a vigorous and far-reaching control of the practice of midwives. This department believes that it is reasonable to infer that these administrative measures have been a prominent factor in the reduction of the death rate from puerperal diseases.

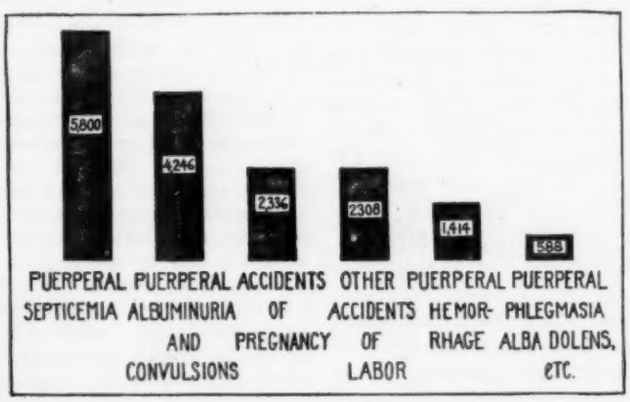

Chart 2.—Maternal mortality by cause of death, birth registration area, 1920.

The second annual report of the Ministry of Health of Great Britain for 1920-1921 states that "midwives now attend the majority of births in England and Wales. In 1919 . . . the percentage of births notified by midwives was 51 in London and 69 in the county boroughs." Midwives in England have been trained and licensed since the Midwives Act became a law in 1902. Between 1902 and 1914, the maternal mortality from puerperal septic diseases in England and Wales has decreased from 118 to 75 per million female population.[4]

The fundamental importance of accurate birth registration scarcely needs comment; but it is interesting to note that the Sheppard-Towner Act seems to have given new impetus to the interest in the subject, and many states include in their plans provision for more effective registration of births.

One phase of birth registration which is especially important in connection with the reduction of the early infant mortality rate, and also in connection with the prevention of ophthalmia neonatorum, is the question of the time which is allowed to elapse between the birth and its registration. Chart 2, giving the time at which births are reported in the various states, indicates that fourteen of the states within the birth registration area do not require the reporting of births early enough to make it of value in the prevention of ophthalmia neonatorum. According to present accepted standards of successful infant care, the early reporting of births is essential, not only in the prevention of blindness but also in instituting proper care as soon after birth as possible, and in establishing breast feeding, etc. The importance of the early reporting of births is strongly indicated by the fact that in the United States death registration area in 1920, one third of all the deaths of infants less than 1 year of age occurred in the first week of life.

The period within which the reporting of births is required varies in the different states. The state laws and regulations specify:

Twenty-four hours in Delaware.

Thirty-six hours in California and Indiana.

Forty-eight hours in Massachusetts and Rhode Island.

Three days in North Dakota.

Four days in Maryland.

Five days in Arizona, Michigan, New Jersey, New York, North Carolina, Texas and Wisconsin.

Six days in Maine and New Hampshire.

Ten days in Alabama, Arkansas, Colorado, Connecticut, Florida, Georgia, Idaho, Illinois, Iowa, Kansas, Kentucky, Louisiana, Minnesota, Mississippi, Missouri, Montana, Nebraska, Nevada, New Mexico, Ohio, Oklahoma, Oregon, Pennsylvania, South Carolina, Tennessee, Utah, Vermont, Virginia, Washington, West Virginia and Wyoming.

Thirty days in South Dakota.

The states that are not in the birth registration area are Alabama, Arizona, Arkansas, Colorado, Florida, Georgia, Idaho, Illinois, Iowa, Louisiana, Missouri, Nevada, New Mexico, North Dakota, Oklahoma, South Dakota, Tennessee, Texas and West Virginia.

Postal notification, with certificate in ten days, is required in Delaware and Massachusetts.

In Montana the law states that if the birth is reported within ten days the person reporting is entitled to a fee.

The availability of hospital facilities for maternity care is a very vital problem, as it is an admitted fact at the present time that the hospital is a necessary adjunct, at least for the abnormal obstetric case, and that it is often safest for the normal case, especially for a primipara.

The situation with regard to hospital facilities for maternity care in this country is very interesting. In 1921 a questionnaire was sent by the federal Children's Bureau to every hospital in the United States of which the name and address could be obtained, in order to determine the adequacy of present hospital

3. Baker, S. J.: Report of Status of Maternal Mortality in New York City (prepared at the suggestion of Senate Committee on Education and Labor).

4. Carnegie United Kingdom Trust: Physical Welfare of Mothers and Children, England and Wales **1**: 30, 1917.

facilities for maternity care. While replies were received from only 76 per cent. of the hospitals circularized, the figures are interesting and significant.

Of the 3,497 hospitals reporting, 2,645 admitted maternity cases in 1920. Of these, ninety-seven were exclusively maternity hospitals and 2,548 were general hospitals. The total number of hospitals reporting by state as admitting maternity cases varied from four in Delaware to 198 in New York. Fifteen states reported no exclusive maternity hospitals. One state reported as many as ten. A total of 27,405 beds was reported available in the 2,645 hospitals. For the year 1920, 2,575 hospitals reported 323,175 confinements. If one computes hospital capacity for confinements on the basis of twenty-six patients to one bed each year, allowing two weeks' hospital stay for each patient, the number of possible confinements in hospitals in the United States in 1920 was 712,530. This is more than twice the number of confinements which actually took place in the hospitals reporting.

On the basis of these figures it is estimated that approximately 13.6 per cent. of the total births during the year 1920 occurred in hospitals. This percentage varied from 1.7 in Arkansas and Mississippi, to 40.1 in Illinois. Though these figures are only approximate, because of the admitted limitations of the questionnaire method, they at least point significantly to several phases of the hospital problem in relation to obstetrics. They show that there is hospital provision for approximately 40 per cent. of the births in the United States, but that only 14 per cent. of the births during 1920 occurred in hospitals. In this lack of utilization of available hospital facilities for confinement care are involved three important problems: (1) cost of hospital care; (2) inaccessibility of hospitals, and (3) lack of knowledge concerning the advisability of hospital care.

Many other equally important problems await solution in connection with the hygiene of maternity and infancy. The Sheppard-Towner Act authorizes an appropriation for a five-year period. Its fundamental purpose is to enable states to demonstrate for themselves the value of such work in terms of life saving and improved health, and to stimulate them to develop more complete programs for making such work effective. It is apparent that the protection of maternity and infancy is not the function of one isolated group, but is dependent on the obstetrician, the pediatrician, the general practitioner, the public health nurse and the social worker in cooperation with the public health authorities. In addition, it is dependent on the cooperation of an enlightened public.

ABSTRACT OF DISCUSSION

DR. MARY RIGGS NOBLE, Harrisburg, Pa.: In the baby work in Pennsylvania, the Sheppard-Towner money will be of value. We shall receive $73,869.99 from the federal fund. This will enable us to enlarge our nursing force. We have eighty state-controlled health centers, and forty centers in which the state is cooperating with some other agency. Others are under private or community control. All told, we have between 375 and 400 well baby centers. The extra money will mean more nurses and more supervision for health centers. It gives us also an opportunity to undertake prenatal work. The establishment of prenatal centers has progressed very slowly. It does not take much money to start such work. The expectant mother has four rights. If we can serve her by educating her as to those rights, we ought to do so: 1. She should have regularly repeated urinalyses. 2. She should have a complete physical examination early, including pelvic measurements. 3. She should have her blood pressure taken at regular intervals. 4. She should have a Wassermann test made, not once, but more than once to ascertain the presence of syphilis. Our clinics are supplied with blood pressure instrument, facilities for making urinalysis, gloves, and a few other small pieces of apparatus. This the state sends to any prenatal clinic that is about to be opened. We hope to start twenty-four prenatal clinics in the state. I do not know whether we shall be able to do this, but we are going to make the effort. Again, regarding the control of midwives, the money has never been adequate; we have never been able to carry out any comprehensive plans. Now we propose to set aside from $10,000 to $15,000 of the Sheppard-Towner fund to demonstrate what can be done in the rural districts, as has been demonstrated in Philadelphia. One or more full-time nurses will be needed. A young woman who has received the proper training and who perceives the dramatic possibility of getting the midwives interested could do a really great work. I have seen it done where there was more difficulty than in this country or in Philadelphia. We demonstrated then that the midwife can become interested in doing better midwifery and in the use of safe, clean methods.

DR. TALIAFERRO CLARK, Washington, D. C.: The solution of the health problems relating to the mother and the infant constitutes the very foundation of all public health work. Beginning one generation ahead of disease, and concerned as it is with the causes rather than with the effects of bad health, child health work offers a most certain way of assuring a healthy adult generation. The Sheppard-Towner law is of too recent enactment for one to say with certainty what has been the direct effect of its provisions. However, in an indirect way the propaganda for the passage of this important and beneficent law has resulted in a more general interest in the problems of maternal and infant welfare. Furthermore, its passage has caused the health officers to take more careful stock of their resources and give more intensive consideration to this special form of health work, in order that in carrying on the work under provisions of the law there may be no imbalance between these and the problems of general sanitation and public health. We should be gratified that Congress has been generous even to the limited extent of the present law. However, I do not feel that we should expect too much of its operation, because the funds provided are hardly sufficient to make any very great impress on these problems. The best we can do is to utilize these funds to the greatest advantage and make such showing during the time that the law is in operation as to create a more general public demand for ample funds to carry on this important form of health work in the future.

DR. W. C. WOODWARD, Chicago: Massachusetts has refused to appropriate money for work under the Sheppard-Towner act, and the attorney-general of the state has reported that in his judgment the act is unconstitutional. Opposition to the act, it seems to me, is based on the fact that in its ultimate analysis the act represents a system of penalties imposed and the rewards granted by the federal government on and to the several states, according as the federal government may or may not be pleased with their conduct. First, the federal government demands of the people of the several states, in proportion to their respective taxable resources, an amount equal to what is required for the execution of the act. The federal government says to the several states: "If you conduct yourselves in a way that meets with the approval of certain of my officers, whom I have named, you may have back some of the money I have taken from you, after I have reserved some of it for my own administrative expenses—maybe all that remains—and, possibly, I may even add a bonus from money that I have taken from other states; but if you do not so conduct yourselves, you get nothing, not even the money I have taken. It matters not what your other needs may be—prevention of malaria, prevention of typhoid fever, the care of the mentally defective, the education of the rising generation—it matters not how much you are already spending for maternal and infant welfare and what your actual needs may be in respect

to it—the money that I offer to return, and even the additional amount that you must appropriate in order to get it, must be spent for maternal and infant welfare and nothing else. Lest you judge unwisely—that is, differently from the way I would judge—as to your needs in this respect, you must have my paternal sanction of your plans and my approval of the way you carry them out, not only so far as relates to the work done with the money I have taken from you and returned, if you get any, but also as relates to the work done with the money that you have appropriated directly from your own treasury." It must be apparent to any one that if the federal government can lawfully pursue such a course with respect to maternal and infant welfare within the several states, and with respect to other of their internal affairs which may in a general way affect the welfare of the nation, as every internal affair of every state does affect the welfare of the nation, the power of the states may soon be a thing of the past and our system of dual government near its end. And the principle of self-determination of small nations—and every state is in substance a small nation that has surrendered certain of its power to the federal government—for which we have contended so strongly abroad, will in our own country vanish. The fact that the federal government has followed such a course with respect to road making, agricultural education, vocational education and other matters, without objection, and has now proceeded to follow the same course with respect to maternal and infant welfare does not justify or excuse the step, but serves merely to indicate the gradual growth of a dangerous practice that may lead to the destruction of the very principles on which our government is founded.

DR. C. HENRY DAVIS, Milwaukee: I do not believe the points made by Dr. Woodward come into the discussion. The courts will decide the legality of the act. It is being discussed from the present health view. At present we must view it as we do the Volstead act. Whether we agree or not, we must accept it because it is here. The medical profession has had little to do with maternity except during a period of four or five centuries. In a twenty-year period ending in 1680, London statistics showed that one woman out of every forty-four died after childbirth. By a physician's being called early, this was reduced so that by 1840 one death occurred after every 168 births. Since 1840 the maternal death rate has remained stationary. As in all conditions in which we try to reduce the incidence of death, the earlier simple procedures will produce marked improvement. After reaching a certain point it is only by much greater expenditure of time and money that further improvement can be demonstrated. We feel that this should be considered a community proposition and worked out from that point of view by education of both the laity and the profession. Education of the profession means better instruction in obstetrics and the providing of better facilities for work. Until the physician demands better conditions under which to labor he will not secure them. The laity must learn that the present death rate is too high and that safety is possible to a much greater extent when there is proper cooperation between the laity and the medical profession. Increased safety always costs money, and the laity must spend more money if it is going to have greater safety in maternity.

DR. S. W. WELCH, Montgomery, Ala.: I come from that section of the United States which, about sixty years ago, started an uphill pull over state rights. My recollection is that Massachusetts was on the opposing side and, if I mistake not, won out in her contention. I have heard that the disagreement over this issue of state rights arose over the possession of certain properties, which the forefathers of my distinguished friend sold to my forefathers. The hard money of the South went to the East in payment for these purchases. When the award was rendered by the methods of arbitration mutually agreed on, no money came back to us for our property, and as a consequence the South has been very poor ever since. The conscience of Massachusetts did not appear to get tender on this issue until the business ceased to be profitable, nor does it appear to have become tender on federal subsidies, until Massachusetts had all she wanted. No protest seemed to have been entered against the high tariff, the deepening of water ways, the road subsidies nor the testing or treating of cattle. The rumor must be true that it is a hard climate on babies. Since babies are the chief asset of the poor, the South has them in large numbers. The climate suits them, and now, when we have a look in on a federal subsidy, let us have a share in it, while Massachusetts lays off, so that we may catch up with her. Alabama needs it. If the questions of constitutionality and state rights are to be raised, let them begin on live stock or some commercial question, and not on questions involving the lives of our children. The South needs the money to help furnish the nation with stronger men and women. If Massachusetts does not need it, very well; but let her keep her hands off of Alabama's share.

DR. W. C. WOODWARD, Chicago: Perhaps Dr. Welch can name some instance in which Massachusetts has received the cream of federal aid. I know of no such instance, and without such knowledge I cannot intelligently discuss the suggestion that an undue share of some federal grant of money has at some time or other come to Massachusetts. If money to pay for the execution of the federal government's part of the cost of the Sheppard-Towner act be collected from the several states on the basis of their respective taxable resources and then be distributed among such states on the basis of population, the states in which the per capita taxable resources are high will financially be the losers. Danger exists in federal subsidies for special lines of activity, when the line selected is determined, as in the Sheppard-Towner act, on the basis of the supposed relative importance of that line of activity to the nation, as a whole, and not on the basis of its relative importance as compared with other internal needs of the particular state. I saw in print some time ago that, in one state, the legislature, lured by the bait of the federal subsidies dangling before it—bribed, some would have expressed it—made such appropriations for vocational and agricultural education that it was with difficulty that enough money could be obtained for the proper support of the general school system. So if a state be seduced into the making of disproportionate appropriations for maternal and infant welfare, it may be unable to provide adequately for other needs—such as milk inspection, prevention of the spread of communicable diseases and medical inspection of schools—and the last state of the community may be worse than the first. Incidentally, attention may be called to an interesting situation that has arisen out of federal bonuses granted states for the purpose of stimulating them to appropriate money for the construction of good roads, which situation may possibly be duplicated under the Sheppard-Towner act. Federal bonuses stimulated road building in some places, it has been said, to such an extent that state money was not available for road maintenance, and the good roads constructed through the artificial stimulus of the federal bonuses were allowed to go into a state of decay. It is to be hoped that the mothers and babies whose health, it is claimed, will be built up and whose lives will be saved by the federal bonus provided by the Sheppard-Towner act will not be allowed to drag out enfeebled existences and to come to premature ends after the puerperium and the age of infancy have passed, because of the inability of the particular state in which they live to provide money necessary for proper sanitation, hygiene and health education, in the interest of the people as a whole.

DR. D. B. MCEACHERN, Chicago: I want to apologize for our profession in its efforts to refute the activities that this bill will make possible. I will not say all the profession. Apparently, according to the newspapers, it has taken an attitude that I would consider reactionary. There was opposition years ago to the establishment of the manual training departments in the public school. Every advance that is made is opposed. They have used every argument against the bill. Of course, the economic condition of the medical profession is endangered by a further extension of public health activities. Yet the medical profession must know that it has to get in line with the changing conditions. Failing to do so, it loses the representative position it should occupy in society.

DR. A. N. CREADICK, New Haven, Conn.: While there may have been opposition to the Sheppard-Towner act on the part of certain obstetricians, this feeling was based on the wording of the original bill. The operation of the present act should improve obstetric teaching and obstetric practice, largely by education of the people whether living in Massachusetts or Alabama, resulting in a demand for better care during the child-bearing period. A second and more serious objection to the bill is based on the risk of a large reduplication of agencies with an overlapping of their work. This will be obviated if the members of the board will utilize acceptable agencies already existing for accomplishing the purposes of the act.

DR. ANNA E. RUDE, Washington, D. C.: Regarding the constitutionality of the act which Massachusetts seems to be questioning, I wish to state that there have been precedents for this type of legislation in this country since 1862. Massachusetts has also discovered that it is receiving funds from twenty-two federal agencies, so one is naturally interested to learn why the health protection of mothers and infants is so peculiarly paternalistic. All of us interested in the success of the measure know that, while the small appropriations carried in the act may limit its activities, at least a beginning toward better protection of motherhood and infancy is assured. There are now forty-two states ready to work as soon as the money is available. This means that in states which have heretofore not had a state child hygiene division, such a division will be established and work begun even if only through the medium of one public health nurse. The sincere effort and thought which have been put into state plans insure, I am confident, splendid progress in the field of maternity and infancy during the next five years; but unless the measure is educational and stimulating to the states, it will not be a success.

DEATH FOLLOWING THE ADMINISTRATION OF THYMOL*

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For many years thymol has had a deserved repute as a relatively safe and efficient anthelmintic drug. In the numerous campaigns conducted for the relief and control of hookworm infestation it has been extensively, and in some campaigns exclusively, employed. The number of doses administered in these campaigns, as reported, probably surpasses one and a half million. In the limited literature available to me for reference, I can find reports of less than twenty fatalities. No doubt fatalities occur which are not reported, but the total number must be exceedingly small. During experience in antihookworm work in Ceylon, Java and Siam and covering a period of six years, I myself have known of only three deaths which were even remotely connected with the administration of thymol. One of these fatal cases occurred in Ceylon, when a planter forgot instructions and administered a liberal dose of brandy to a coolie who was weak and dizzy from the absorption of thymol. The other fatal cases are described below.

It is well to call attention to the large number of cases of safe administration, lest the real value of the drug be overlooked when its toxicity is emphasized. On the other hand, the large number of safe administrations is liable to cause laymen and even medical officers to grow somewhat lax, and to forget or ignore the fact that they are dealing with a drug which, when absorbed, is highly toxic.

In the antihookworm campaigns in Siam, the oil of chenopodium is the preferred drug in dealing with hookworm and roundworm infestation, because of its greater efficiency in small doses, and because it is less expensive. In dealing with patients infested with tapeworms, thymol is the drug of preference because of its greater efficiency as a tenicide. More than 82,000 treatments with thymol, in all, have been administered in Siam with two resultant fatalities.

The majority of patients treated with thymol show some signs of its toxic action, such as flushed face, slight dizziness, and drowsiness. These symptoms usually disappear rapidly after the administration of the final purge. In some countries the drug is dispensed to the patients, who are permitted to take it in their own homes without medical supervision. This practice is not followed in Siam, where the entire course of treatment is personally administered by the medical officer in charge or by his trained dispensers. These rules have been adopted for the administration of thymol:

1. A preliminary small dose of magnesium sulphate is taken by the patient the evening before treatment.
2. No breakfast is permitted on the day of treatment.
3. At 7 a. m., 20 grains (1.3 gm.) of thymol mixed with an equal amount of lactose is administered in capsule.
4. At 9 a. m., an additional dose of 20 grains of thymol is given.
5. At 10 a. m., a final purgative dose of magnesium sulphate in hot water is administered.

Among selected cases which can be carefully observed, as in the military hospitals, a total of 60 grains (4 gm.) is occasionally given in two or three divided doses; but for field work the maximum of 40 grains (2.6 gm.) in divided doses has been considered to be perfectly safe for adults. In one of the cases reported below, the medical officer on his own responsibility administered the 40 grains in a single dose.

REPORT OF CASES

CASE 1.—*History.*—In an interior province, a woman, aged 34, applied to the government medical officer for treatment for tapeworm infestation. She had not taken the preliminary dose of salts, and applied at the hour when the second dose of thymol was being administered. The medical officer examined her and considered her to be well able to take the treatment. As she had eaten no breakfast, he administered in a single dose 40 grains (2.6 gm.) of thymol in capsule as described above. Twenty minutes after taking the medicine she complained of feeling slightly dizzy, so the medical officer gave her a purgative dose of magnesium sulphate in hot water. The patient soon felt much better, and requested permission to return to her house, which was about 100 yards distant. The medical officer made her wait for another half hour, but as she seemed to have recovered from her dizziness he allowed her to go, accompanied by a neighbor. She walked about 80 yards, when she suddenly became weak and fainted. The officer went to her at once. She was unconscious, very pale and in a cold perspiration. The pulse was fairly strong and regular, and the respirations were not increased. She was carried to the office, where an enema was given, hot applications were applied to the body, and hypodermic stimulation was employed. She did not regain consciousness. Within half an hour the pulse became irregular and weak, and the respirations labored. Artificial respiration was begun and was continued for over an hour, until her death. She died three hours after taking the thymol.

Comment.—After her death, the relatives stated that it was not unusual for her to faint. Possibly a cardiac or thyroid involvement existed which escaped the notice of the medical officer. Even so, the death of an adult three hours after the administration of 40 grains of thymol has not heretofore

*The observations which form the basis of this paper were conducted with the support and under the auspices of the International Health Board of the Rockefeller Foundation.

been reported, so far as I can determine. The absorption of thymol may have been increased by the fluid of the saline purge, or the depressing action of the magnesium sulphate may have hastened her collapse. There can be little doubt, however, that thymol poisoning was the direct cause of her death.

CASE 2.—*History.*—A woman, aged 40, applied for treatment for tapeworm infestation. The medical officer found that she suffered from pulmonary tuberculosis, although the disease was not in an advanced state. With the hope that the removal of the tapeworm would increase her chance of combating the tuberculous infection, he decided to treat her. She was given 20 grains (1.3 gm.) of thymol at the first dose, and as this made her slightly dizzy he gave her only 10 grains (0.65 gm.) of thymol in the second dose. After the final purge, the slight dizziness entirely disappeared. The next day, however, she again felt dizzy and drowsy. The medical officer repeated the catharsis and gave her stimulants. The symptoms persisted for several days without improvement, and she was confined to her bed. Everything possible was done to relieve her, but by the seventh day pneumonia had developed, and on the ninth day after taking the treatment she died.

Comment.—The total dose of thymol administered in this case was 30 grains (2 gm.), an amount which caused no symptoms whatsoever in her father (aged 70 years), who took treatment the same day. Although the immediate cause of her death was pneumonia developing in tuberculous lungs, there is little reason to doubt that the absorption of thymol was a contributory cause.

SUPERNUMERARY URETER WITH ABNORMAL ORIFICE

REPORT OF CASE

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The comparative paucity of reports of cases in which there is a supernumerary ureter, together with the great relief afforded the patient after proper diagnosis and correction, makes a brief review of the subject of interest.

As this is a developmental defect, a thorough understanding of the subject requires a review of the embryology. The ureter is formed from the lower part of the wolffian duct. Its distal end divides, to become implanted into the kidney protoplasm. Later the proximal end or end opening into the wolffian duct draws away, and opens separately into the sinus urogenitalis. The important theories advanced to explain bifurcated and double ureter are:

1. Sappey: The ureteral anlage, instead of branching near the kidney, branches sooner, thus forming a bifurcated ureter.
2. Caudmont: The condition is brought about by the partial fusing together of two kidneys.
3. Deubierre: There is a double evagination from the wolffian duct.

Any of these theories is acceptable for a bifurcated ureter. In the case of double ureter, the division must have taken place early in fetal life (third or fourth week).

From the wolffian duct in the female, Gartner's duct is all that remains. If the ureter does not separate as it should from the wolffian duct, the ureter will open into Gartner's duct. If it becomes attached to the müllerian duct, it will open into the uterus or the vagina. If after the sixth week of fetal life the ureter does not become detached from the wolffian duct but follows it in its downward course, it will open into the urethra or vaginal vestibule. In the female genitourinary apparatus, cases are reported of ureteral orifices in the urethra, vagina, vestibule of the vagina, Gartner's duct, uterus or tubes.

SYMPTOMS

One symptom, that of urinary dribbling associated with voiding of normal quantities of urine at intervals, should make one suspicious. In some cases, as in mine, the ureteral orifice seems to be provided with a sphincter which allows the urine to gush out at intervals or during exertion. The skin may become excoriated, owing to the ever present urine. An infection may ascend along the ureter, causing pyonephrosis and death.

REPORT OF CASE

O. N., a woman, aged 34, married, was referred to me with a history of urinary incontinence, dating from birth. Further questioning elicited her opinion that the incontinence had been worse since the birth of her one child. No instruments were used, at this time, the baby weighing only 5½ pounds (2.5 kg.). No smarting or burning was present before, during or after urination. Exertion or coughing cause urine to leak freely. Urination occurred normally at intervals, at which time a fair amount was voided. The past history was negative except for there having been a pain on the left side of the pelvis for which an operation removing the left tube and ovary was performed. The appendix was also removed at this time. Menstruation began at the age of 14 and had always been normal. There had not been any miscarriages. Physical examination was negative except for a reddened urethral meatus and a slight cystocele. Cystoscopic examination disclosed a normal bladder, with prominent ureteral orifices.

As the leakage appeared in spurts after coughing and the patient thought that the incontinence had been greater since the birth of her child, a diagnosis of poor sphincteric control was made and the Kelly mattress suture operation was performed, May 25, 1922. The following day, however, the perineal dressings were wet with urine, as they also were on the succeeding morning.

May 27, consent was obtained to reexamine the patient, and she was returned to the operating room. The bladder was filled with a methylene blue solution, and the patient was instructed to cough. As she did so, clear urine, instead of the stain, gushed out. The bladder was then emptied and filled with boric acid solution. Indigocarmin, 5 c.c., was injected intravenously, and appeared from both ureters in four minutes. The leakage remained clear, however, and the discovery of the orifice was not aided by this test. The patient was anesthetized, and a thorough search was made after the sutures of the previous operation had been removed, and the vagina and the entire course of the urethra were inspected. Finally the orifice was seen about one-third inch (8 mm.) posterior to the urethral meatus in the vaginal vestibule. A valvelike structure closed it and made it invisible except while urine flowed from it. A probe was passed for a distance of about 7 inches (18 cm.). Because of the extensive manipulation and chance for infection, it was thought inadvisable to attempt dissection and transplantation from the perineal side, for fear that a fistula might result; hence the abdomen was opened. The ureter was located on the right side by aid of the inserted probe. It was dissected free, severed and transplanted into the bladder. Catherization was ordered to be done every four hours for two days. At the end of this time the patient was voiding normally, and continued to make an uneventful recovery.

COMMENT

In this case the extra ureter must have come either from a distinct part of the right kidney or from a supernumerary kidney which had insufficient function to excrete the indigocarmin. Had it been from the same kidney pelvis as that of the normal right ureter, there is no reason why the indigocarmin should not

have appeared at its orifice simultaneously or shortly after. The second theory, that of Caudmont, that the condition is brought about by the partial fusing together of two kidneys would explain it better than either of the other two. Unfortunately, a sample of this urine was not collected to determine whether or not its characteristics varied from that of the normally excreted urine.

410 Wellman Building.

Clinical Notes, Suggestions, and New Instruments

A SIMPLE AID IN THE DIAGNOSIS OF SYPHILIS FROM THE PRIMARY LESION

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A simple, efficient and easily made instrument which assists greatly in obtaining serum from the primary syphilitic lesion for dark field examination is pictured in the accompanying illustration. It consists of an ordinary all glass syringe of either 2, 5 or 10 cubic centimeter capacity, from which the tip and lowermost portion of the barrel are removed. This removal is accomplished by holding the tip of the syringe at a right angle against the side of a revolving emery wheel, and moistening the surface in contact with the wheel occasionally to diminish heating and insure a finer finish. Different sized instruments are advisable for use on lesions of varying magnitude.

All glass syringe from which the tip and lowermost portion of the barrel have been removed. The two parts are fitted together and the instrument is then ready for use.

When the instrument is to be used, the suspected lesion is cleansed in the customary manner and the open end of the instrument placed over the ulcerated area, surrounding it like an inverted cup. Slow withdrawal of the piston results in the creation of a vacuum in the barrel, and small beads of serum appear on the base of the ulcer which may be utilized for the examination. This withdrawal of serum takes place from the deeper tissue, and it is possible thus to obtain a positive dark field from a lesion which shows no spirochetes on its surface. In the event that the instrument does not adhere satisfactorily to the skin surface surrounding the ulcer, this difficulty may be overcome by dipping the tip of the instrument into water or saline solution before applying it.

Traumatism from squeezing the lesion as it is usually practiced in obtaining serum for dark field examination is avoided by using this instrument. It is self-evident that such an instrument is not adaptable to all types of lesions, as their situation may be such as to render its employment difficult or impossible. It is believed that the use of this instrument will greatly facilitate the usual examination and lead to a higher percentage of positive diagnoses from the primary lesion.

A feature worthy of note is that such an instrument may be prepared from a syringe that has had its tip broken off in use and which is generally discarded as being of no further value.

Puberal Mammary Hypertrophy.— Hypertrophy other than puberal may occur in either sex with general obesity, and there is a probability of some of these cases being associated with hypopituitarism. Large, voluminous breasts may be an individual peculiarity or may be hereditary.—Greig, *Edinburgh M. J.*, April, 1922.

LEAD POISONING, FROM DRINKING "MOONSHINE" WHISKY

WARREN T. VAUGHAN, M.D., RICHMOND, VA.

CASE 1.—J. B. M., a man, aged 37, was admitted to St. Elizabeth's Hospital, Nov. 8, 1920, complaining of pain in the upper portion of the abdomen, with nausea and vomiting. The illness had begun about October 1, with severe epigastric pain, nausea and vomiting, which were relieved only by the administration of morphin. After the third day the symptoms had been partially relieved, and during the three weeks following, the patient had remained very nearly symptom-free. October 30, however, following two or three days of severe constipation, the abdominal symptoms had returned. Once again they were partially controlled by morphin, but six days later the condition had apparently become critical. The bowels did not move in spite of brisk catharsis. The patient had vomited no blood, nor had he noticed any in the stools. Pain was localized just above the umbilicus, and did not spread to the back, to the shoulder blades, or to the lower abdomen.

The patient had had a similar attack in August of 1917 or 1918. The illness at that time had lasted for about two weeks. His appetite had been good until the onset of the present illness, and the bowels had been regular, without cathartics. He had formerly been subject to spells of diarrhea with bloody stools every spring, but had been free from such attacks for three or four years. There was no history of jaundice. The patient had at times suffered from hemorrhoids.

There was little further of interest in the patient's general history. He customarily drank one cup of coffee daily, whisky occasionally, smoked a package of cigarets each day, and occasionally chewed tobacco. He took no drugs. He was a road-worker, and had been at this occupation for the last eight years, working from ten to fifteen hours a day. Previous to that time he was a farmer.

The general physical examination was negative except for some tenderness in the epigastrium, and distinct tenderness over McBurney's point. There was no rigidity. There was no lead line present in the gums over the incisor or canine teeth, but considerable pigmentary deposit was present in the tissues of the gums around the molar and premolar teeth. The teeth themselves were dirty, worn and carious, and there was considerable pyorrhea. The urine showed 2-plus albumin on a scale of 4-plus, but was otherwise negative. The renal function was good, as indicated by a phenolsulphonephthalein excretion of 58 per cent in two hours. The blood urea nitrogen was 23 mg. for each hundred cubic centimeters. Routine blood examination revealed a moderate leukocytosis (14,400), with a normal differential count. The red cell count was 4,304,000; hemoglobin, 64 per cent. The erythrocytes showed considerable stippling, and an occasional normoblast was found. The blood Wassermann reaction was negative.

Gastric analysis disclosed a delayed rise in acidity to normal figures at the end of two hours. Feces examination, including microscopic examination, was negative. After a few days in the hospital, the albumin disappeared from the urine. A two-hour renal test for fixation of volume and specific gravity revealed 360 c.c. night output, with a specific gravity of 1.019, and normal variation in volume and specific gravity throughout the day. Barium studies were essentially negative. The patient was so tender over the region of the appendix that examination was incomplete as regards that organ.

The diagnosis in this case was (1) lead poisoning and (2) chronic appendicitis. The latter was subsequently corroborated at operation, at which time a Lane band was also found.

The interesting feature of this case lies in the source of the lead poisoning. The patient denied all contact with lead in any form, in his work as a road-builder, and he stated that he had built his own home and knew that there was not a lead pipe in the house. Repeated conversations with him in attempts to discover some point in his daily routine which would bring him in contact with soluble lead were unsuccessful. Finally, one day while reperusing the history it occurred to us that the "moonshine" whisky which the patient admitted having drunk in moderate amounts might be lead-containing. He was questioned on this point, and then admitted that he was a heavy drinker and that he was in the habit of drinking only "moonshine" whisky. A specimen of the whisky was obtained from his home, and was examined by Dr. Herbert W. Emerson of the University of Michigan Medical School. The sample of liquor contained 52 per cent. by volume of alcohol, and lead determined as lead acetate to the amount of 1 grain (0.065 gm.) in 500 c.c.

CASE 2.—R. L. S., a man, aged 31, a stenographer, was admitted to the hospital, Feb. 4, 1922, complaining of pain in the pit of the stomach. During the preceding week he had suffered from intense abdominal cramps, radiating around the navel. The pain was constant, and was associated with attacks of nausea and vomiting. Codein had been necessary for the relief of pain. Constipation had existed only since the onset of the illness, and had been controlled by magnesium citrate. There was nothing of importance in the past history. The patient admitted having taken an occasional drink, but denied drinking corn whisky.

Examination of the respiratory tract was negative. Cardiovascular examination detected nothing noteworthy. The blood pressure was 120 systolic and 78 diastolic. Neurologic examination was essentially negative. Examination of the gastro-intestinal tract disclosed a heavy grayish coated tongue, some pyorrhea alveolaris, a narrow though distinct lead line on the gums, distinct tenderness in the epigastrium and beneath the right rib margin, and considerable spasm of the right rectus muscle with some general abdominal rigidity. There was also a moderate right costovertebral tenderness. Jaundice was absent.

The remainder of the examination was negative except for a patch of choroiditis in the fundus of the right eye. A diagnosis of lead poisoning was made. There was some question as to whether a cholecystitis was also present. A contrast meal was given, with negative roentgen-ray findings. Plates of the gallbladder region were negative. Gastric analysis revealed an absence of free hydrochloric acid, and a low total acidity. The urine was negative except for 1-plus albumin. Renal function was normal, as estimated by the phenolsulphonephthalein test. The red count was 3,240,000; hemoglobin, 85 per cent.; color index, 1.3; white count, 7,500; differential count, normal. There was considerable stippling of the red cells; otherwise the blood smear was negative. Feces examination was negative. The blood Wassermann reaction was negative.

In view of the experience in the first case, whisky was immediately suspected as a source of the patient's lead poisoning, and on closer questioning and after explanation of the diagnosis, the patient admitted that between Dec. 25, 1921, and Feb. 4, 1922, he had drunk between 2 and 3 gallons of corn whisky. A specimen of this liquor was obtained and examined by Dr. James M. Whitfield of Richmond, who found lead equivalent to 1.9 grains of metallic lead per pint, or 2.1 grains of lead oxid per pint, or 3.8 grains of crystallized lead acetate per pint.

This patient, like the former, was placed on appropriate treatment, and convalesced uneventfully.

CASE 3.—G. C., a man, aged 28, a farmer, admitted Sept. 17, 1921, complained of abdominal pain localized chiefly in the region of the umbilicus. He had had a somewhat similar attack in March, 1921, and again in July. The last attack had begun two weeks before admission, with gas on the stomach and cramplike pains spreading across the abdomen. He was nauseated and vomited frequently. During the days just prior to admission he had suffered much from cramping pains in the arms and legs. The patient was constipated, and as a rule used some cathartic every other day. There was nothing remarkable in the remainder of the history other than a story of breathlessness with precordial throbbing and substernal pain on exertion, during the preceding three years.

The general condition was good. Examination of the respiratory and cardiovascular systems was essentially negative The heart borders were within normal limits; the sounds were of good quality, and a faint soft systolic blow was heard over the apex. This was not transmitted to the axilla. The blood pressure was 130 systolic and 70 diastolic. The positive points in the enterologic examination were a foul breath, a heavily coated tongue, carious teeth with worn articular surfaces and many snags, considerable pyorrhea alveolaris, and a distinct lead line on the gums, especially posteriorly. Abdominal examination was essentially negative, there being little spasm and no tenderness to palpation. Neurologic, urologic, orthopedic, ophthalmologic and otologic examinations were all essentially negative.

There were rather numerous stippled red cells in the blood. The white count was 5,400; the hemoglobin, 80 per cent. The differential count disclosed a neutrophilia of 80 per cent. The blood Wassermann reaction was negative. Urinalysis was entirely negative except for a very slight trace of albumin. The feces examination revealed nothing noteworthy.

Once again whisky was suspected, and the patient admitted having been a heavy drinker of whisky during the past three years. Throughout this entire time he had been making the liquor himself, and he recalled that the worm in the still was made of lead piping. He admitted having often taken as much as a quart of whisky daily. A sample of "moonshine" whisky was obtained from the patient's still. The following qualitative test for lead was applied: The specimen was acidified with hydrochloric acid, and an equal amount of ammonium sulphid was added. A black precipitate formed, indicating that a metal was present belonging to the first part of Group 2. The black precipitate was easily redissolved in acetic acid. The addition of potassium dichromate quickly formed a "chrome yellow" precipitate, indicating the presence of lead. The same solution treated with one drop of potassium ferrocyanid did not show a red precipitate, thereby ruling out copper.

SUMMARY

The three cases reported are all typical of acute or subacute lead poisoning.

In all a lead line was recognized in the gums, and stippled cells were present in the blood.

In all three cases careful questioning failed to reveal any source of lead poisoning other than whisky obtained from "moonshine" stills.

All three patients had been drinking this whisky to excess, over periods varying from five weeks to three years.

Lead was shown by test to be present in relatively large amounts in samples of whisky obtained from each patient.

Under appropriate treatment and by the avoidance of further ingestion of suspicious whisky, these patients recovered uneventfully, and have remained well. No other change was made in either their occupation or their environment.

617 West Grace Street.

The Urine Test in Tuberculosis.—After a trial of Wildbolz' urine test, I. Villarreal de la Garza (Tesis, Mexico, 1922) is very skeptical as to its value in the diagnosis of tuberculosis. He applied it in 26 cases of tuberculosis, 22 cases of suspected tuberculosis and 16 clinically healthy with these results: Tuberculosis cases, positive, 77 per cent.; doubtful, 3 per cent; negative, 19 per cent.; suspected tuberculosis: positive, 79 per cent.; negative, 8 per cent.; doubtful, 12 per cent.; clinically well cases: positive, 75 per cent.; negative, 19 per cent., and doubtful, 6 per cent. Villarreal also tried, with similar uncertain results, Roger's complement fixation test, a hetero-urine test and the tuberculin test. In his opinion the skin reaction in Wildbolz' test is due to irritation caused by the urine salts.

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SATURDAY, SEPTEMBER 16, 1922

MILK CALCIUM FOR CHILDREN

As was noted in The Journal [1] at the time, experiments completed about two years ago established the average calcium requirements of normal maintenance, and showed that a considerable proportion of American dietaries fail to meet this requirement and must therefore be considered subnormal as regards their calcium content. The calcium requirement of growth being relatively larger than that of maintenance, it follows that there is real and frequent danger that children's dietaries may fail to furnish as much calcium as is needed for the support of normal growth and the optimal development of the bones and the teeth; hence the need of an abundance of calcium-rich food in the diet of growing children. That adequacy of calcium intake is an extremely important, and may often be the crucial, factor in the feeding of children has been recognized by students of nutrition, but a satisfactory definition of the child's needs in this respect has heretofore been lacking because the quantitative relationship between the needs of growth and of maintenance had not been worked out.

This has now been done. In accordance with its excellent policy of establishing by its own research when necessary the scientific standards to guide its work of rehabilitation and relief, the New York Association for Improving the Condition of the Poor has cooperated with Columbia University in an extended series of experiments to determine the dietary conditions which induce an optimal storage of calcium, and presumably therefore the best development of bones and teeth in growing children from 3 to 14 years of age.[2] On an ordinary mixed diet containing daily 750 gm. of milk, and furnishing a total of from 0.74 to 1.02 gm. of calcium a day, these children stored calcium about in proportion to their body weights, the average being 0.01 gm. of calcium stored for each kilogram of body weight, daily. When the allowance of milk was increased to 1,000 gm. a day, the storage of calcium was improved. Experiments in which the calcium intake was systematically raised or lowered step by step by increasing or decreasing the amount of milk led to the definite conclusion that optimal calcium storage requires an intake of virtually 1,000 gm. or, in household measure, 1 quart of milk daily for each child.

The only other foods whose calcium content is high enough to make them a possible alternative to milk as the chief source of calcium in children's dietaries are the vegetables. Many experiments were made in the attempt to supply the needed calcium, chiefly in the form of vegetables; but when vegetables replaced even half of the milk as the source of calcium, the calcium assimilation was always unfavorably affected. Evidently children do not utilize the calcium of vegetables as efficiently as they do that of milk. The net result of all the experiments, covering twenty-one different children and a total of 417 experimental days of complete quantitative determination of intake and output of calcium, is to show that optimal storage of calcium is to be expected only when the child's dietary contains about 1,000 gm. of milk daily, which standard ought to be maintained whenever possible up to puberty. The dietary rule of a quart of milk each day for every child is much more than a precept based on individual opinions or drawn by analogy from the results of feeding experiments with lower animals; it now rests on scientific evidence obtained by extensive and intensive experiments directly on the children themselves.

1. The Calcium Requirement of Man, editorial, J. A. M. A. **75**: 1649 (Dec. 11) 1920.
2. Sherman, H. C., and Hawley, E.: Calcium and Phosphorus Metabolism in Childhood, J. Biol. Chem. **53**: 375 (Aug.) 1922.

BUFFER SYSTEMS IN BLOOD

Within the last twenty years, the importance of a uniform hydrogen-ion concentration in the body fluids, and the mechanism whereby this constant is maintained, have been given considerable attention, and much useful fundamental information has resulted from investigations along this line. The significance of the reaction of the liquid medium in respiration, in enzyme action, in the swelling of colloids and in other vital phenomena of cells has been given detailed attention in the recent literature. Methods of measuring with extreme accuracy and of expressing the reaction of body fluids have been so well developed that the terms have become common in physiologic parlance.

The regulation of this constant is entirely chemical, and there are several systems available in the blood for accomplishing it. L. J. Henderson of Harvard University was one of the first to set forth clearly the part which the phosphates in the plasma could play in neutrality regulation by acting as "buffers" against increased acidity or alkalinity. The importance of the carbonate-bicarbonate system in transporting carbon dioxid, and incidentally in resisting a change in hydrogen-ion concentration, has been elaborately set forth by Van Slyke and his colleagues. Loeb's recent experiments have again emphasized the plasma proteins as possible regulators of reaction.

The red corpuscles, likewise, take part in maintaining neutrality. Although there are no authentic reports of movement of basic ions into or out of the red cells, numerous investigators have shown that there is a migration of acid ions from the plasma into the erythrocytes under conditions of increased acidity such as occurs with higher concentrations of carbon dioxid. The wandering acid ion thus leaves the molecular equivalent of base free in the plasma to combine with the invading acid. There are, therefore, the phosphate and protein systems, which belong strictly to the plasma, and the corpuscle-carbonate system, which may be said to be lent to the fluid portion of the blood.

The extent to which these various factors cooperate to maintain the optimal hydrogen-ion concentration has recently been indicated by Doisy, Eaton and Chouke.[1] As a result of investigations on man and the dog under carefully controlled experimental conditions, they conclude that the buffers occurring in the serum and acting independently of the corpuscles account for 16 per cent. of the basicity available for the neutralization of carbon dioxid acidity. Of this amount the phosphates furnish from 1 to 3 per cent., while the remainder is presumably provided by the serum proteins. The base set free by the movement of acid ions into the corpuscles accounts for 84 per cent. of the available buffer of the blood. Of this amount, 80 per cent. is due to the base derived from the chlorids, the rest coming from the dissociation of other salts in the serum.

These results represent pioneer studies in the evaluation of the quantitative relationship of the blood buffers. Here there is again emphasized, from a new point of view, the importance of chlorids in the physiologic economy of the body. The significance of the protein factors in neutrality regulation has been minimized; but if they account for as much as 12 per cent. of the buffer value of the blood, as indicated in this recent contribution, we must add to the already long list this important function of the serum proteins.

1. Doisy, E. A.; Eaton, Emily P., and Chouke, K. S.: Buffer Systems of Blood Serum, J. Biol. Chem. **53**: 61 (July) 1922.

MILK SECRETION AND DIET

If the urgent admonition to mothers to nurse their infants is justified—and who will gainsay this advice—it becomes obviously important to secure adequate information regarding the physiology and pathology of lactation. Our knowledge of the phenomena of milk production in woman is far from extensive. Personal circumstances make it difficult, if not always impossible, to conduct experiments on the human being in order to learn the factors which modify the volume and quality of the secretion of the mammary gland, despite the evident need of first-hand evidence as to the possible variations in health and in disease. Consequently it has become necessary to depend on the outcome of studies on other species during lactation, and to apply these to human conditions so far as the analogies seem justified.

For evident reasons, the foremost observations on milk secretion have been made on cattle. That the volume of milk produced each day is subject to variations dependent in some way on diet has long been appreciated. The newer knowledge of nutrition, however, has necessitated some new formulations of the problems involved. The foodstuffs are no longer conceived to be circulating as such in the organism. Proteins reach the blood stream in the form of their constituent amino-acids; carbohydrates are transported as simple six-carbon sugars; and even the fats are altered by digestion so that they may be carried to the tissues in the form of phosphatids, such as lecithin. In fact, Bloor[1] has recently asserted that considerable evidence of an indirect nature may be brought to the support of the thesis that lecithin in the blood is the main form of transport of fat, and the precursor of fat in the tissues, and conversely, that fat from the tissues on entrance into the blood is changed to lecithin.

Meigs[2] of the Bureau of Animal Industry, himself an active investigator of the origin of milk constituents, has recently summarized the still fragmentary knowledge in this field by pointing out that milk secretion is preeminently affected through changes in the quality and quantity of the amino-acid mixture circulating in the blood. Of course, in ultimate analysis such variations are brought about by changes in the quantity or quality of the protein fed and also, as now becomes evident, by marked changes in the quantity of the nonprotein part of the ration. However, the immediately responsible factors could not be suspected before the advent of refined methods of microchemical analysis of the blood which enables us to know something more exact about the pabulum carried to the glandular tissues. The changes referred to tend to affect the whole amount of milk yielded rather than the concentration of protein in the milk. It is eminently important to bear in mind, therefore, that volume rather than composition is the foremost variable in milk secretion.

Meigs has further pointed out the improbability that milk secretion is affected by any changes in the concentration of the blood sugar which can be brought about under ordinary circumstances. The sugar content of milk is notably almost invariable; but the amino-acid mixture circulating in the blood plasma seems, under certain circumstances, to have an effect on secretion of milk fat. How the latter can continue to exhibit a reasonable constancy of make-up despite great diversity in the food intake was not easy to understand prior to the suggestion that milk fat is presumably derived from the blood phosphatids.[3] These contain phosphorus as well as fatty acid groups; con-

1. Bloor, W. R.: Fat Transport in the Animal Body, Physiol. Rev. **2**: 92 (Jan.) 1922.
2. Meigs, E. B.: Milk Secretion as Related to Diet, Physiol. Rev. **2**: 204 (April) 1922.
3. Meigs, E. B.; Blatherwick, N. R., and Cary, C. A.: J. Biol. Chem. **37**: 1 (Jan.) 1919.

sequently both the fat and the phosphorus in the diet play some part in the genesis of the factors on which the milk fat depends. Of the other important nutritive components of milk, the calcium is fairly constant in amount, as is the plasma calcium from which it is derived; and the vitamin content of milk has been the subject of frequent comment in these columns.[4]

THE GASTRIN THEORY

The fundamental conception involved in the theory of hormone activity in the organism has proved to be popular and fruitful in its applications. Instead of ascribing all sorts of physiologic performance to the effect of stimulation through nervous channels, the possibility that chemical substances poured into the blood stream may travel through the body in the circulation and, reaching specific organs and tissues, may act directly as stimuli to receptive structures, has become recognized. That hormones may thus act as excitants of the secretory glands discharging into the alimentary tract has been demonstrated beyond question; and it has become customary to speak of secretins or secretagogues which promote flow from such glands. The latter may be influenced in their physiologic activities, therefore, by both nervous and chemical stimuli.

One of the early demonstrations of such possibilities was furnished by the English physiologist Edkins,[5] who discovered that acid extracts of the pyloric mucous membrane, when injected into the circulation, provoke a secretion of gastric juice. He believed that a specific hormone—gastric secretin—is formed by the contact with the mucosa, and he assumed that under such conditions it is regularly absorbed and consequently acts as an important factor in maintaining gastric secretion after meals. Subsequent investigators, notably of the Chicago school,[6] have shown that there is nothing specific about extracts of the pyloric mucosa in this respect; for many other tissues yield extracts which, on intravenous injection, function as secretagogues.

The direct application of the findings to secretion as it occurs normally in life has been wanting. Will extracts and solutions demonstrated to act by Edkins' procedure also provoke secretion if they are put into contact with the stomach rather than injected directly? The crucial test has recently been made by Ivy and Whitlow[7] of Chicago. They failed to obtain an increased secretion in isolated stomach pouches, produced experimentally in animals, when various substances, including food extracts of reputed potency, were applied to the mucosa of the pyloric pouch. The gastrin theory postulated that food substances in contact with the mucosa of the pyloric antrum causes the formation of a hormone which is absorbed into the blood stream and carried to the glands of the fundal mucosa so as to stimulate them. In the hands of the latest Chicago investigators this gastrin theory has failed to receive support. Incidentally, the slowness of absorption from the pyloric mucosa has been demonstrated anew, confirming the well established conviction that the stomach is not primarily an organ for absorption.

4. Relation of Feeds and Diet to the Vitamin Content of Milk, editorial, J. A. M. A. **75**: 747 (Sept. 11) 1920; Food Proteins and Breast Milk, ibid. **77**: 1340 (Oct. 22) 1921; The Nutritional Variability of Milk, ibid. **78**: 1540 (May 20) 1922.

5. Edkins, J. S.: J. Physiol. **34**: 133, 1906.

6. Keeton, R. W., and Koch, F. C.: Am. J. Physiol. **37**: 481, 1915. Luckhardt, A. B.; Keeton, R. W., and Koch, F. C.: Ibid. **50**: 527, 1920.

7. Ivy, A. C., and Whitlow, J. E.: The Gastrin Theory Put to Physiological Test, Am. J. Physiol. **60**: 578 (May) 1922.

Current Comment

THE DOCTORATE OF PHILOSOPHY IN SCIENCES RELATED TO MEDICINE

The influence of the war on higher education is strikingly shown by the number of Ph.D. degrees granted by American universities since 1916, for this fell off as the size of the American army increased (1917, 372; 1918, 293; 1919, 180). This is a confirmation of the acknowledged fact that the scientific men of the country played an increasingly important part in the activities of the army and navy. In 1921 there were 332 doctorates conferred in the natural sciences by thirty-two institutions, as compared with 323 by the same number of institutions in 1920. With the larger number of college trained men now entering medical schools, and the increasing provision for graduate courses in medicine, larger numbers of higher degrees in the sciences related to medicine may be expected. The accompanying table, taken from the report of the National Research Council,[1] gives data of interest in connection with medical education. It will be seen that chemistry retains its position at the head, this year having more than one third of the total, which fact perhaps makes it somewhat surprising that physics has failed to advance, and remains behind zoology and botany. Of the sciences directly part of the medical curriculum, bacteriology maintains a healthy growth,

DOCTORATES DISTRIBUTED ACCORDING TO SCIENCES

	1912	1913	1914	1915	1916	1917	1918	1919	1920	1921
Chemistry	78	68	71	85	115	108	75	54	96	134
Zoology	20	26	25	32	33	30	33	24	38	36
Botany	30	28	34	40	36	37	39	23	48	29
Physics	30	22	23	31	35	32	17	18	19	28
Psychology	29	24	12	22	19	32	30	21	38	26
Bacteriology	6	3	6	4	4	11	11	6	7	19
Mathematics	22	21	25	23	34	30	23	7	19	16
Geology	23	14	13	26	17	24	14	5	17	11
Physiology	12	2	8	8	14	18	11	1	13	8
Astronomy	2	11	2	7	6	5	0	1	4	5
Geography	0	1	0	3	3	3	1	0	3	5
Anatomy	6	1	2	5	1	3	5	0	3	4
Anthropology	0	3	2	6	1	4	2	0	2	4
Agriculture	11	8	9	9	6	19	18	12	8	3
Metallurgy	0	0	0	1	1	0	1	1	0	2
Engineering	2	0	4	2	2	5	4	1	5	1
Pathology	2	2	1	2	2	6	8	6	3	1
Mineralogy	0	0	0	1	0	0	0	0	0	0
Meteorology	0	0	0	0	0	1	1	0	0	0
Paleontology	0	0	4	2	3	4	0	0	0	0
Totals	273	234	241	309	332	372	293	180	323	332

1. Science **55**: 271 (March) 1922.

having now passed mathematics and geology. Examination of the titles of the theses in bacteriology shows that nearly all of them relate to medical problems, and some are strictly immunologic. Physiology would show a larger number but for the inclusion of some of the degrees in biochemistry under the chemistry group. We even find in chemistry a thesis on "Prematurely Senile Rats"! Others belong equally clearly to pathology and pharmacology. Among the theses in psychology we notice one on "Adenoids and Diseased Tonsils: Their Effect upon General Intelligence." As yet the doctorate in the clinical medical sciences does not appear in the list, but it soon will, since in recent years a larger interest has been taken in the teaching of the clinical branches of medicine, and greatly improved methods have been developed. With the dearth of trained teachers in the fundamental branches, it is to be regretted that so few higher degrees are being granted in anatomy, physiology and pathology. Let us hope that the efforts that are now being made to relieve this situation will soon bear fruit.

TETHELIN FAILS

Endocrinology appeared to have scored a new conquest when, in 1916, T. Brailsford Robertson, then of California but now of Australia, isolated from the anterior lobe of the pituitary glands of cattle a substance to which he gave the name of tethelin and which he regarded as an active growth-controlling principle.[1] The earliest intimations of its supposed properties were obtained from observations of the effects produced by feeding growing mice. Before long tethelin was hailed as a product capable of accelerating the healing of wounds[2] and promoting recovery after inanition. A specific of this sort was certain to receive a hearty welcome into the small category of known compounds with demonstrated definite potencies in the direction of promoting cell activity. Biochemists have been slow to accept the substance as something deserving of their serious consideration, however, for even superficial study of the mode of preparation outlined for the patented product suffices to indicate that tethelin is likely to be "a very impure mixture of substances of the lipoid class." This is what the English physiologist Drummond[3] has, in fact, demonstrated. But he has further reported criticisms of the growth experiments made by Robertson as to the effect of the pituitary constituent; and since new feeding trials conducted at the Institute of Physiology in University College, London, fail to point to any influence of the oral administration of anterior lobe substance on the growth of test animals, the burden of proof now rests with the proponents of the much advertised tethelin. When the manufacture of tethelin was taken up in 1918 by a pharmaceutical firm, under license from the University of California which controlled the patent, the Council on Pharmacy and Chemistry considered the product. It was found that there was no adequate evidence for its value as a therapeutic agent. The Council postponed definite action on the product to await confirmatory evidence. Now however, in part because of the negative results of Drummond and Cannan, the Council has concluded the consideration of tethelin and declared it inadmissible to New and Nonofficial Remedies. It may seem unfortunate to record such reverses of the judgment of men of science; but mere publicity must not be allowed to lead to therapeutic hopes until they are justified by sound logic and demonstrable results.

1. Robertson, T. B.: J. Biol. Chem. **24**: 385 (March) 1916.
2. Robertson, T. B.: The Effects of Tethelin, J. A. M. A. **66**: 1009 (April 1) 1916.
3. Drummond, J. C., and Cannan, R. K.: Tethelin—the Alleged Growth-Controlling Substance of the Anterior Lobe of the Pituitary Gland, Biochem. J. **16**: 53, 1922.

CULTURAL METHODS IN CHRONIC GONORRHEA IN WOMEN

As a public health measure in controlling the period of detention of infected women, it is of great importance to substantiate a clinical diagnosis of chronic gonorrhea by isolation of gonococci from the infected genital tract; but this is often difficult because of the great predominance in cultures and smears of other organisms. A comparative study of the relative values of smears, cultures and complement fixation tests in the diagnosis of chronic gonorrhea in women has recently been made by Torrey, Buckell and Wilson.[1] For obtaining cultures they transported swabs in a mixture of "vitamin agar" and ascitic fluid, and later seeded the material on plates of "ascitic-veal-urine-glycerol-agar," "ascitic-salt-free-1.5 per cent. peptone-vitamin-agar," and on similar mediums to which a solution of methyl violet or iodin-green had been added.[2] In nine of twenty-nine culturally positive cases, there was no clinical evidence of gonorrhea; in nineteen of twenty-six culturally positive cases, no gonococci were found in the smears; in seven cases in which the clinical diagnosis of gonorrhea was doubtful and which were culturally negative, complement fixation was definitely positive, and in two of these cases, smears contained gonococci; gonococci were present in smears from eight of forty-one patients that were culturally negative, and thirteen other patients of this group gave a positive complement fixation test; and in four of sixteen cases that were culturally positive, complement fixation was negative. From these observations the authors are led to believe that clinical observations, cultural tests, gram-stained smears, or complement fixation cannot be relied on alone as guides to the diagnosis of actual infection with gonococci. In recent years, many mediums and procedures for cultivating gonococci have been advocated, and there is now no uniformity of opinion as to the most useful method. In several of the cases studied by Torrey and his co-workers, successful isolation of the gonococci was obtained with one of the four mediums used by them, while there was no growth of gonococci on the other three. It is generally accepted that an abundance of moisture in the air of the incubator is essential for growth of gonococci, but there is still a difference of opinion as to the most favorable amount of amino-acids, the best source of growth-stimulating substances,

1. Torrey, J. C.; Wilson, M. A., and Buckell, G. T.: Comparative Value from Standpoint of Public Health of Smears, Cultures and Complement Fixation in the Diagnosis of Chronic Gonorrhea in Women, J. Infect. Dis. **31**: 148 (Aug.) 1922.
2. Torrey, J. C., and Buckell, G. T.: Cultural Methods for the Gonococcus, J. Infect. Dis. **31**: 125 (Aug.) 1922.

the degree of hydrogen-ion concentration, the oxygen tension and the value of selective dyes. It is important that these problems be solved, because dependable and standardized cultural results will be of the greatest value; but until this is accomplished, smears, cultures and complement fixation should be carried out whenever possible, the limitations of each being borne in mind.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ALABAMA

Branch Laboratories to Be Established.—Branch state laboratories will be established in three cities by the state board of health. This was made possible by an appropriation from the International Health Board of the Rockefeller Foundation. Laboratories in Birmingham and Mobile will be opened immediately and another later in the Tennessee Valley. The laboratories, cooperating with the municipal laboratories, will engage in bacteriologic work and diagnosis and control of communicable diseases.

ALASKA

Personal.—Dr. William A. Borland, Hoonah, who has been taking a graduate course in New York, has returned to Alaska.——Dr. George S. Lesher, La Conner, Wash., has accepted a position with the U. S. Public Health Service at St. George Island.

ARKANSAS

Hospital News.—A hospital and bath house were dedicated at Hot Springs, August 30. The buildings were erected by a negro fraternal organization at a cost of $200,000. More than 2,000 delegates from the organization attended the dedication ceremonies. Dr. Ellis A. Kendall gave an address.——An ordinance appropriating $300,000 for the completion of the new city hospital at Little Rock was passed recently by the city council.

CALIFORNIA

Hospital Conference.—The second annual conference of the hospitals of California was held in Pasadena, September 5-8. Dr. William E. Musgrave, San Francisco, was chairman of the conference.

Public Health Broadcasted.—The health department of the county of Los Angeles is broadcasting public health lectures every two weeks from Station K U Y, located at El Monte. In addition to the regular series, special lectures will be broadcasted from the El Monte station from time to time.

International Health Exposition.—The field of public and private health will be covered at the International Health and Safety Exposition to be held in the Oakland Auditorium, November 17-26. There will be charts and lectures, with special emphasis on the idea of disease prevention and health education among children. The exhibit will show how the health center works from a central headquarters surrounded by the treatment and neighborhood centers and by the centers in the outlying towns of the country.

Personal.—Dr. James Marion Dillon, El Monte, has been issued a permit to erect a twelve-room office building, to be used either for a county health center or for professional offices. The building will be erected at a cost of $12,000.——Dr. John J. Miller, San Jose, has returned from a trip to England, Ireland and France.——Dr. Clarence O. Sappington, San Francisco, assistant surgeon, U. S. Public Health Service, has been appointed to a fellowship in industrial hygiene at the Harvard School of Public Health, Boston.

Hospital News.—A new navy hospital, erected at San Diego at a cost of $1,000,000 was commissioned, August 24.——Work has been started on an addition to Ahwahnee Sanatorium, Ahwahnee. This institution is maintained by Merced, Stanislaus and Madera counties for tuberculous patients. The nurses' home and the vocational building are among those to be enlarged.——A new hospital, to cost approximately $60,000, will be erected at the Paradise Valley Sanatorium, National City. The new hospital will contain fifty rooms.

CANAL ZONE

Institute of Tropical Research.—At a meeting of the executive committee of the Institute for Research in Tropical America, it was decided to concentrate the efforts of the institute on the establishment of a research station near the Gorgas Memorial Institute at Panama. Thomas Barbour, Harvard University, Boston; H. E. Crampton, representing the New York Academy of Sciences; A. S. Hitchcock, Smithsonian Institution; A. G. Ruthven, University of Michigan, and Witmer Stone, Philadelphia Academy of Science, are the members of the committee.

COLORADO

Physician's License Revoked.—An official report from the state board of medical examiners states that the license of Dr. James B. Clymer, Mead, has been revoked on the charge of habitual intemperance and the use of spirits, narcotics and stimulants, and on the ground that he had performed several criminal abortions.

CONNECTICUT

Bequest to University.—Under the will of the late William Sloane, $100,000 has been bequeathed to Yale University, New Haven, and $10,000 to the Yale Foreign Missionary Society for the Hunan-Yale College of Medicine, Changsha, known as Yale in China.

DISTRICT OF COLUMBIA

Smithsonian Institution.—A meeting of the scientific staff of the institution was held recently to discuss promotion of research. A committee on research was appointed with Dr. Walter H. Merrill, chairman. Mr. Frederick V. Coville, Dr. Fewkes, Mr. Fowle, Dr. William H. Hough, Mr. Nelson and Mr. Leonard Stejneger are the other members. The committee will hear reports on proposed research projects from various persons and consider means for taking them up.

FLORIDA

Prisoners Aid Malaria Control.—Prisoners from the city stockade in Tampa are employed in cleaning out city dumps in the antimosquito campaign now being conducted in that city.

Personal.—Dr. Frederick F. DuPree, Tampa, has been appointed assistant superintendent of the Arizona State Hospital for the Insane, Phoenix. Dr. DuPree was formerly acting assistant surgeon in the U. S. Public Health Service. Dr. William S. Gramling, Miami, gave an address on "The Physics of Radium and Radioactive Substances" before the Dade County Medical Society, August 17.

Scholarships in Medicine.—Florida has established seven free scholarships in the state medical college, one for each congressional district, the governor making the appointments. Selections are based on three conditions: (*a*) the excellence of the student's previous class work; (*b*) the attainment of the standard of qualifications required by the medical school, and (*c*) the financial need of the individual. A similar number of scholarships is available also in pharmacy.

ILLINOIS

Physician Fined.—It is announced in the Davenport *Times* that Dr. Prudens Sterck, Moline, arrested several weeks ago in Davenport on a statutory charge, was fined $200 and costs, August 22.

Hospital News.—The Holden Hospital, Carbondale, has been appraised with the idea of issuing bonds for new buildings and improvements. An expenditure of $50,000 is contemplated.——Miss Blanche Easton, Chicago, has succeeded Sidney G. Davidson as superintendent of Rockford Hospital.

Dr. Sloan on Health Board.—Dr. Edwin P. Sloan, Bloomington, has been elected secretary of the state advisory health board to succeed Dr. C. W. Lillie of East St. Louis, who died recently. An effort will be made to place Illinois in the

birth rate area by having stringent laws passed compelling the registration of all births.

Poliomyelitis Decreasing.—According to a report of the department of public health of the Public Health Bureau, Washington, D. C., it is stated that infantile paralysis is on the decrease in Illinois. In July and August, 1921, there were a total of 558 cases, and in July and August of this year, only twelve cases have been reported.

Medical Examinations at State Fair.—At the state fair held in Springfield, free physical examinations were made by experts of the state department of public health, under the direction of Dr. Isaac D. Rawlings. Blood pressure tests were made and registration cards with height and weight were given out. An annual examination was urged for every one. At the Pageant of Progress, in Chicago, more than 15,000 persons were so examined in a booth in charge of physicians. Free examinations were made at the Central States Fair at Aurora, and will be conducted at the fair at Kankakee also.

Chicago

Former **University Professor Dies.**—Prof. Alexander Smith, formerly professor of chemistry and director of general and physical chemistry at the University of Chicago, died recently at his home in Edinburgh, Scotland, aged 56.

Personal.—Dr. J. Edwin Rhodes has returned to the United States after a tour of England, Scotland and France.——Dr. William L. Baum returned recently from a trip abroad.——Dr. Herman N. Bundesen has been appointed a member of the advisory committee of the state board of health by Governor Small to succeed Dr. John Dill Robertson.——Dr. Daniel N. Eisendrath, Chicago, read a paper on "The New Aspects of Kidney and Ureter Surgery" before the Scott County Medical Society at Davenport, Iowa, September 5.

IOWA

Personal.—Dr. William S. Norton, Muscatine, has been reelected school physician by the board of education.——Dr. Frank Radcliffe Senska, Iowa City, has arrived in West Africa, where he will do medical missionary work. Dr. Senska is the first physician to be stationed at Sakbayeme, it is announced. He will have a temporary dispensary building and hospital.——Dr. and Mrs. Taeke Bosch have returned, on furlough, to Iowa City from China. They have been engaged in medical missionary work in that country during the last seven years.

KENTUCKY

New Building at Memorial Hospital.—A new building, with accommodations for 100 patients, is under construction at the Booth Memorial Hospital, Covington. This institution is under the direction of the Salvation Army .

Personal.—Dr. Albert Stewart, Georgetown, has been appointed director of the Scott County Health Department, to succeed Dr. H. V. Johnson.——Dr. Annie Veech, director of the bureau of child hygiene, with the assistance of Dr. Alice Pickett and a nursing staff, is conducting a series of child hygiene conferences and schools for midwives in the southeastern part of Kentucky.

LOUISIANA

Child Welfare.—The twelfth station of the Child Welfare Association was opened, August 24, at New Orleans. This station was a memorial gift from an anonymous donor. Dr. Rena Crawford will be in charge of the baby clinics.

Fund for Tulane University.—A fund of $60,000 for establishing a chair at Tulane University, New Orleans, for teaching methods of combating tropical diseases and hygiene, and one amounting to $30,000 for constructing an isolation building for the Charity Hospital will eventually be available to these institutions under the will of the late William G. Vincent. The chair will be known as the William G. Vincent professorship of tropical diseases and hygiene.

Hospital News.—The St. Luke's Private Sanatorium, New Orleans, will be ready for the reception of patients about September 20. Dr. B. F. Gallant has been appointed medical director of the institution. St. Luke's recently acquired the building and grounds of the St. Simeon School.——The contract has been awarded for the erection of a new addition to the clinic of the Charity Hospital, New Orleans, to be erected at a cost of $70,140. The clinic will be completed in six months.——A physiotherapy department has been installed at the Charity Hospital under the direction of Miss Marion Bentley.——A new two-story brick sanatorium will be erected at Ponchatoula by the Benevolent Knights of America.

Physicians Resign from Hospital.—Charging that the Rev. J. C. Barr, president of the managers of the Presbyterian Hospital, New Orleans, was interfering with the internal affairs of the institution and that he had made the position of Dr. Henry L. Stickney, superintendent of the hospital, formerly of Dwight, Ill., untenable, Drs. Marcy J. Lyons and Hiram W. Kostmayer, members of the board's advisory committee, submitted their resignations to the board of managers, August 27. Dr. Stickney resigned, August 22. The hospital board has been requested to oust the Rev. Mr. Barr, as he is an untrained man, unfamiliar with medical affairs, and if this is not accomplished an effort will be made to close the hospital altogether. Mrs. Garnier is at present acting superintendent. Many other members of the staff are preparing to resign unless the conditions are altered, it is announced.

MARYLAND

Malaria Outbreak in County.—Malaria has been unusually prevalent in Wicomico County, on the eastern shore of Maryland, the total number of cases reported to the state department of health since September 1 being seventeen, eleven of these in Salisbury, the county seat. Dr. John S. Fulton, secretary of the state department of health, has returned from Salisbury after investigating conditions and conferring with the city and town authorities in regard to controlling the disease.

MINNESOTA

State Medical Meeting.—The annual meeting of the Minnesota State Medical Association will be held in Minneapolis, October 12-14, under the presidency of Dr. James Frank Corbett of Minneapolis.

Epilepsy Colony Planned.—The state board of control will petition the next legislature for the establishment of a colony for epileptics, near the Twin Cities, to be separate from the school for feebleminded at Faribault. It is stated that the Minnesota School for the Feebleminded is congested, there being 1,900 inmates in the school, and a waiting list of 200. Three hundred of the inmates are epileptics. The superintendent of the Faribault institution asked the board for $724,700 for new buildings and repairs, but this amount was reduced by $213,000 by the board of control.

Hospital News.—A new hospital building is to be erected for the use of the students in the Agricultural School of the University of Minnesota in St. Paul, at a cost of $12,000.——The North Central Minnesota Hospital Association has purchased the old St. Anthony Hospital building at Bemidji, formerly operated by the Benedictine Sisters. The institution will be remodeled for use as a city hospital at a cost of $75,000.——The Menahga Hospital, Menahga, has been closed by Dr. R. H. Sweetman and the equipment removed to Sauk Centre. The new institution will be known as the Sauk Centre Hospital.

Personal.—Dr. John S. Abbott, St. Paul, has sailed for Europe to visit hospitals.——Dr. Charles E. Caine, Morris, has been appointed a member of the University State Board of Medical Examiners.——Dr. Otto W. Scholpp, Hutchinson, has returned from Vienna, Austria.——Dr. John A. Thabes, Brainerd, has been appointed a member of the state board of health to fill the vacancy caused by the resignation of Dr. Egil Boeckmann.——Dr. Reginald Fitz, professor of medicine in the Mayo Foundation, Rochester, has been appointed associate professor of medicine at Harvard University, Boston, and visiting physician to the Peter Bent Brigham Hospital.

NEBRASKA

Maternity Department at Hastings Hospital.—The Mary Lanning Memorial Hospital, Hastings, will erect a maternity building at a cost of $40,000 in the near future.

Personal.—Dr. W. Eugene Wolcott, Omaha, recently returned from a European trip.——Dr. James S. Foot, professor of pathology, Creighton Dental College, was voted a research fund by the Nebraska State Dental Society, recently. Simultaneously came a report that he had suffered a cerebral hemorrhage and partial paralysis while on his vacation at Bass Rocks, Mass.

NEW YORK

Veterans' Bureau Officers Adopt Resolutions on Death of Dr. Spitzka.—The officers of the second district of the U. S. Veterans' Bureau adopted resolutions regarding the death of Lieut.-Col. Edward A. Spitzka, in charge of the district.

Railway Surgeons' Association.—The thirty-second annual session of the New York and New England Railway Surgeons' Association will be held at the Hotel McAlpin, New York, October 28, under the presidency of Dr. Donald Guthrie, Sayre, Pa.

Hospital News.—A new $150,000 building will be erected at the Middletown City Hospital to replace buildings destroyed by fire, it was recently announced.——The Blythdale Home for Convalescent Tuberculous Crippled Children has purchased a 20-acre farm, 3 miles north of White Plains, and the occupants will be removed there shortly. This will double the bed capacity of the institution.——An appropriation of $100,000 has been made for the erection at Kings Park State Hospital, Kings Park, L. I., of a diagnostic and curative building, where suspected, incipient and advanced cases of tuberculosis can be treated. Dr. William C. Garvin is superintendent of the institution.

New York City

Montefiore Hospital has New Roentgen-Ray Machine.—A roentgen-ray machine which has a voltage of 350,000 and is said to be as modern as any in the United States has been installed at the Montefiore Hospital, through the generosity of Samuel Sachs, a member of the board of directors of the institution. The machine is portable and can be used at the bedside. A clinic will be started at once for the treatment of outpatients suffering from cancer.

Report of Jewish Hospitals.—The Federation for the Support of Jewish Philanthropies has recently issued a report of the work done last year at dispensaries maintained at four hospitals, Mount Sinai, Fifth Avenue, Beth Israel and the Hospital for Joint Diseases, showing that in these dispensaries 129,189 persons received treatment. A total of 398,176 treatments were given during the year, a daily average of 1,381 treatments. The federation also maintains social service groups in connection with each of these hospitals.

Eye Conservation Councilors.—The Eyesight Conservation Council of America has elected a number of prominent educators to the board of councilors, following a recent visit of Dr. John J. Tigert, U. S. Commissioner of Education, to Columbia University, where classes in eye conservation are being held this year for the first time. Among the new councilors are Sidney E. Mezes, Ph.D., president of the College of the City of New York; Prof. Joseph E. Roe of New York University; Charles H. Judd, Ph.D., of the University of Chicago and Francis C. Caldwell of Ohio State University.

Personal.—Dr. James Ewing has been appointed a member of the state board of medical examiners, to take charge of the department of pathology.——On August 31, a welcome home dinner was tendered at Lebanon Hospital to Drs. Abraham J. Rongy and Lipman M. Kahn, who recently returned from Europe.——Dr. Rosalie Slaughter Morton has returned to New York from Serbia, where her medical labors received the highest decorations from the government.——Dr. George E. Davis read a paper before the International Otological Congress at Paris in August.——Drs. Abraham, A. Brill, Louis Hauswirth and Bradley L. Coley sailed recently for Europe.——Dr. Harold S. Vaughan returned from Europe, September 8.——Dr. Mary K. Isham sailed for Europe on the Cunarder *Saxonia*, September 9.

Deaths from Accidents.—According to the records of the New York City Department of Health, during 1921, 3,483 persons died as the result of accidents. This is a decrease of 400 over the number of accidental deaths three years ago. About 75 per cent. of all victims of accidents were males. Persons at the extremes of life suffered most heavily from accidents; that is, those least able to take care of themselves. The most important cause of accidental deaths, from the numerical point of view, was the automobile. During 1921, 849 persons were killed in this city as the result of automobile accidents; this is a ratio of about fifteen per hundred thousand of the population. The heaviest mortality was between the ages of 5 and 14 years, the rate during this period of life being thirty-one per hundred thousand. During 1921, 864 persons died as the result of falls, a ratio of almost twelve per hundred thousand. The health department asserts that it should be possible to prevent this type of accident. Burns and scalds furnish another cause of death numerically important; almost half of the 323 deaths from this cause occurred during the first five years of life. Accidental deaths from gas poisoning have been steadily decreasing during several years past. During the last three years, there has been a substantial decrease in the number of deaths from drowning. During the last year, fifty-three boys between the ages of 5 and 14 were drowned in the waters surrounding the city, and eighty between the ages of 15 and 24. The department of health, in commenting on the figures, calls attention to the fact that most accidents are the result of carelessness, and that children should be educated, from the time they can walk, to exercise care, and that this education should be continued through school life.

NORTH CAROLINA

Child Welfare Campaign.—Under the auspices of the North Carolina Tuberculosis Association, with the cooperation of the state board of health, an intensive campaign will be conducted for malnourished schoolchildren in several counties of the state. It has been found, following a survey, that 30 per cent. of the schoolchildren in the state are under weight for their age and height. Proper treatment will be given to those who are handicapped by physical defects and diseases.

OHIO

Health Commissioner Resigns.—Dr. Kirke R. Teachnor, Hamilton, has resigned as health commissioner of Butler County, owing to ill health. Dr. Clifford J. Baldridge, Cincinnati, will succeed Dr. Teachnor.

Hospital News.—Health Commissioner Ilford and the council committee have recommended the purchase of an apartment building to be remodeled as a contagious disease hospital. Bonds for $200,000 will be issued for this purpose.——A new tuberculosis hospital will be erected at Newburg, in the near future, at a cost of $250,000.

OKLAHOMA

Fund for Physician.—Following a special meeting of business men at Kenton, recently, a fund is being raised to induce a physician to locate in that city. Kenton has been without a physician for several months and much anxiety is felt for the welfare of the community during the coming winter.

PENNSYLVANIA

Personal.—Dr. Robert P. Elmer, Wayne, with the exception of 1921, national archer champion since 1914, recently established a unique record in archery. At a recent tournament, Dr. Elmer scored 1,230 points. In addition to winning the double York and the American rounds he won the Robin Hood Cup presented by Douglas Fairbanks.——Dr. Harry A. Spangler and Dr. Edward R. Plank have been appointed medical inspectors of the Carlisle School Board for the coming year.

Philadelphia

Personal.—Dr. Charles Custis Harrison has tendered his resignation as chairman of the board of trustees of the University of Pennsylvania. He had been chairman of the board since the resignation of Dr. Edgar Fahs Smith, provost and a trustee of the university for the last forty-six years.

Hospital Contracts Awarded.—St. Agnes Hospital has awarded a contract to William R. Dougherty for a two-story laboratory, at an estimated cost of $44,000.——Contract for the building to be erected by the city at Byberry for tuberculous patients has been awarded to George H. Evans, Inc., at an estimated cost of $119,430.

Building Italian Hospital.—Work on the new Italian Hospital at 1307-1309 South Broad Street is well under way. The hospital will be ready to receive patients late in December. For twenty years, Italians of Philadelphia, individually and through their societies, have been collecting money for the erection of their own hospital. Through the aid of Cardinal Dougherty, the ground was purchased by the Missionary Sisters of the Sacred Heart, who will conduct the institution. The cardinal, in sanctioning the project, also presented the hospital with a piece of ground adjacent to the Broad Street property, facing on Juniper Street. The Missionary Sisters are taking an active part in planning the building and are directing the work of construction from their convent. The hospital, when completed, will be the first institution to be conducted by Italians only. It will be open to all denominations and will have thirty-five beds.

SOUTH CAROLINA

Personal.—Dr. Francis A. Coward, director of the South Carolina State Laboratory at Columbia since 1908, has accepted a position with the Montana Board of Health and will have charge of the state laboratory. Dr. Herbert M. Smith has been appointed to succeed Dr. Coward.——Dr. Clough H. Blake has been appointed a member of the board of health of Greenwood.

TENNESSEE

Personal.—Dr. George R. McSwain, Paris, has gone to Rochester, Minn., to take a graduate course at the Mayo Clinic.——Dr. William S. Quinland has been appointed head of the department of pathology at Meharry Medical College, Nashville.——Dr. Marion L. Bingham has resigned as director of the Women's Hygienic Department at the University of Tennessee and has accepted a position with the medical department of Vassar College, Poughkeepsie, N. Y.

Sanatorium for Drug Addicts.—Drs. Arthur R. Porter, John L. Jelks, Walter R. Wallace and Thomas C. Graves were appointed on a committee in Memphis recently to formulate plans for a campaign to raise funds to obtain a site and erect a sanatorium for drug addicts near Memphis. The patients would be given free treatment. Several subscriptions of $100 have already been received toward the erection of the institution, which the city will help to support and maintain.

TEXAS

New Buildings for University.—A meeting of the board of regents of the University of Texas, Galveston, was held, August 23, to make arrangements for the purchase of real estate opposite the medical college in order to enlarge its facilities. Efforts have been under way for some time to acquire the nine lots opposite the medical college for the purpose of constructing additional buildings. It is hoped to start actual construction work by November 1. Extensive improvements to the medical college building and the John Sealy Hospital are also being planned.

UTAH

American Association for the Advancement of Science.—The sixth annual meeting of the Pacific division of the association was held in Salt Lake City, recently, in conjunction with the summer session of the national association, and under the presidency of Barton Warren Evermann, director of the California Academy of Science. E. C. Franklin, Ph.D., professor of chemistry, Stanford University, San Francisco, was elected president of the Pacific division.

VIRGINIA

Criminal Mental Hygiene.—Dr. William F. Drewry, Petersburg, Dr. Robert Finley Gayle, Richmond, Dr. James K. Hall, Richmond, and H. D. Coghill, Richmond, have been appointed on the board of criminal mental hygiene.

Provision for Physicians in Rural Districts.—A bill introduced in the Virginia legislature offers twenty scholarships plus $250 each in the University of Virginia Medical Department to students who, after graduation, shall practice medicine for at least five years in the rural section of the Congressional district from which they were appointed.

WISCONSIN

State Medical Meeting.—The seventy-sixth annual meeting of the State Medical Society of Wisconsin was held at Green Lake, September 6-8, under the presidency of Dr. Sidney S. Hall, Ripon. The first annual physicians' golf tournament was held, September 8. The following officers were elected for the ensuing year: president, Dr. Frank Gregory Connell, Oshkosh; vice presidents, Drs. A. J. Wiesender, Berlin, John L. Yates, Milwaukee, and Eugene E. Tupper, Eau Claire, and Dr. L. Rock Sleyster, Wauwatosa, secretary. The next annual meeting will be held in 1923, at Milwaukee.

PHILIPPINE ISLANDS

New Licenciates.—Of eighty-one candidates who took the examination of the Medical Board of Examiners of the Philippine Islands, forty-two passed and eighteen were conditioned. Those who passed under condition will have to practice six months in any creditable hospital before receiving their licenses.

PORTO RICO

Tuberculosis Survey.—As the result of an appeal from the Porto Rico Chapter of the Red Cross and from Governor Reilly, the U. S. Public Health Service has sent Dr. Frederick C. Smith of the tuberculosis division to San Juan for a preliminary survey of the tuberculosis situation in the island. The Red Cross states that there are no special clinics for the diagnosis or treatment of this disease and that only about 125 hospital beds are available on the island. There is a great deal of tuberculosis in San Juan and throughout the island. The Red Cross has found in many cases as many as ten persons living in a single room with a tuberculous patient.

CANADA

Hospital News.—The need of a hospital in Montreal for drug addicts was emphasized by Dr. John A. Amyot, deputy minister of health, who was among the speakers at the formal opening of the hygiene section of the congress of French-speaking physicians at Montreal recently.

Medical Meeting.—At the annual session of the Canadian Pacific Medical Association, held in Vancouver recently, Dr. D. A. Munro was elected president for the third consecutive year. Dr. J. Carmichael was elected vice president and Dr. A. M. Innes, secretary-treasurer. This association looks after the medical and surgical work of the railway employees of British Columbia.

Public Health News.—The provincial board of health figures for infantile paralysis show an alarming increase over last year. The epidemic center is Hamilton, Ont., where fifty-two of the ninety-four cases are reported. There were ten deaths during the month of August, half of them occurring in Hamilton. Deaths from tuberculosis head the communicable diseases list, with 109 out of 113 cases. On the whole, the month's record compares very favorably with that of the corresponding month of 1921.

Public Health News.—Coincident with "Cancer Week" in the United States, the medical profession throughout the Dominion of Canada will cooperate in a brief educational campaign designed to draw the attention of Canadians to the ravages of this disease. It is estimated that in the province of Quebec alone, more than 1,200 deaths occurred from this cause last year. "Cancer Week" will begin, November 12, and the following provincial chairmen have been appointed: Alberta, Dr. F. H. Newman, Calgary; Ontario, Dr. Alexander Primrose, Toronto; Nova Scotia, Dr. John Stewart, Halifax; Manitoba, Dr. Robert J. Blanchard, Winnipeg; British Columbia, Dr. Gilles, Vancouver; Quebec, Dr. Fred J. Tees, Montreal; New Brunswick, Dr. Murray McLaurin, St. John; Prince Edward Island, Dr. Stephen R. Jenkins, Charlottetown; Saskatchewan, Dr. Hugh E. Munroe, Saskatoon.

Personal.—Dr. Charles K. Clarke, medical director of the Canadian National Committee for Mental Hygiene, and professor of psychiatry at the University of Toronto, has been asked to deliver the Maudsley lecture on psychiatry at the congress of the British Medico-Psychological Association in London in 1923.——Dr. Marcel Pinard, chief medical consultant of the Hospital Boucicault, Paris, Dr. Paul Gaston, chief of the central laboratory of the St. Louis Hospital for Skin and Syphilitic Diseases, Paris, and Dr. Desmarets, Paris, representative of the French ministry of education, recently addressed a meeting at Toronto, under the auspices of the Canadian Social Hygiene Council.——Dr. L. Ombrédanne, Paris, and Dr. Camille Laviolette, St. Jean de Dieu Hospital, Montreal, delivered addresses before the convention of French-Speaking Physicians of North America, in Montreal recently.

The Regional Reunion at Nicolet.—The *Union médicale du Canada* gives the details of the recent meeting at Nicolet, continuing the series of regional reunions inaugurated by the Trois-Rivières Medical Society. A large number of physicians from the region and beyond were present, and Dr. J. H. Leduc presided. Prof. A. Rousseau of Laval delivered an address on "Malignant Endocarditis," which, he said, "is often the despair and sometimes the disgrace of the physician." He described ten cases in detail to show the points to guide in the difficult differential diagnosis. "Pure septi-

cemia kills early or soon disappears. . . . The protracted forms of septicemia indicate that there is some focus of infection where the septicemia keeps renewing itself. All the other foci are more readily found than that in the heart. The localization in the endocardium is the most insidious and the hardest to detect." The next regional reunion will probably be held in Portneuf County, in connection with the county medical society.

GENERAL

American Academy of Applied Dental Science.—The fourth annual meeting of the academy will be held, January 8-11, at Miami, Fla., under the presidency of G. D. Laymon, D.D.S. All students in both the medical and the dental profession are invited to take the course in orology.

American Veterinary Association.—At the fifty-fifth annual session of the American Veterinary Medical Association in St. Louis, W. H. Welch, Lexington, Ill., was elected president. Governor Hyde of Missouri gave the address of welcome at the opening meeting of the convention, August 28. Dr. Veranus A. Moore, Ithaca, N. Y., was among the visiting physicians who spoke at the meeting.

American Chemical Society.—The American Chemical Society, through its committee on national policy, expresses its appreciation of the cooperation of the American Medical Association in its work on behalf of chemistry in the United States, and commends the American Medical Association for its efforts to insure that whisky furnished for medicinal purposes on prescription shall be of high standard.

National Safety Council.—At the eleventh annual congress of the National Safety Council held at Detroit, a letter was received from the President endorsing the work. The president of the council announced that a large sum of money had been made available by a group of insurance companies, to aid the council in its campaign against automobile accidents. One sixth of all deaths from accidents in 1921 were due to automobiles, and 1,702 persons were killed at railroad crossings, of whom 1,276 were occupants of automobiles.

Medical Examination of Postal Employees.—It has been announced by the Postoffice Department, Washington, D. C., that the employees of the postal department in fifty-seven of the largest cities throughout the United States will be given free medical examinations whenever required. This plan has been authorized by the Treasury Department and will be conducted by members of the U. S. Public Health Service in the cities designated by the postal officials. This project, it is stated, marks the beginning of a movement to provide free medical examinations for all postal employees.

American Psychological Association.—At the meeting of the association in 1921, there was constituted a section of consulting psychologists, to represent persons able to carry on the applications of psychology at a recognized scientific level. This section was restricted to members of the section of clinical psychology until recently, when it was announced that applications for membership to the section of consulting psychologists would be accepted from all members of the American Psychological Association. Communications should be addressed to Dr. F. L. Wells, 74 Fenwood Road, Boston.

National Cancer Week.—The director of the American Society for the Control of Cancer has submitted his initial reports to the society's headquarters in New York. National Cancer Week will be conducted by the society, November 12-18, during which facts concerning cancer will be broadcasted so that the general public may recognize the symptoms in the early stages of the disease. Literature, lectures, newspaper and magazine publicity will be used to tell the public how to recognize this dread disease. Last year, as a result of National Cancer Week, more than 10,000,000 persons were reached with cancer facts.

Regulation on the Use of White Lead.—The government of Tunis has recently informed the International Labor Office (League of Nations) of a recent decree regulating the use of white lead. This decree prohibits, after one year from the date of promulgation, the use of white lead, of plumbiferous oils and of all specialized products containing white lead, in both the internal and the external painting of buildings. White lead may not be used in other operations except in the form of paste. Hand work is forbidden as well as dry scraping and dry rubbing down, and in all painting operations in which white lead is used, the workers must be provided with clean overalls. Violations of this order will be subject to penalties.

Meeting on Child Hygiene.—Child hygiene workers from all parts of the United States will gather in convention in Washington, D. C., October 12, for the twelfth annual meeting of the American Child Hygiene Association, of which Herbert Hoover, Secretary of Commerce, is president. The convention will last three days, and among those who will speak are Mr. Hoover, Sir Auckland Geddes, Dr. L. Emmett Holt, and Miss Elizabeth Fox of the Red Cross. The convention will be given over to subjects relating to child hygiene in its various phases, including the training of nutrition workers, the preschool child and nursing, social and maternity work.

Physicians in Rural Districts.—A survey was recently made by the professor of rural problems at the Ohio State University regarding the country doctor. It is stated that in the remote country districts there are plenty of country doctors to take care of patients, but that, in the regions near a larger city, the physician often forsakes his rural practice for the broader opportunities of the city. It was also stated that the average country doctor practicing in Ohio today has to care for about twice as many patients as does his city colleague. In the fifteen Ohio counties that have the largest urban population, every rural doctor now has to take care of an average of 1,512 persons. In the fifteen counties of the state which are most thoroughly rural, there is one physician for every 887 persons.

U. S. Bureau of Mines.—A report outlining the history and development of the bureau, its legal authority, organization, personnel, appropriations and cooperation with other agencies, has recently been issued by the U. S. Bureau of Mines. The report is the ninth in a series concerning those activities of the U. S. government which deal directly or indirectly with public health. Previous reports of the council include reports of the division of vital statistics of the bureau of the census; the children's bureau of the department of labor; the women's bureau of the department of labor; the government health activities (with a chart); the division of school hygiene of the bureau of education; the health section of the bureau of Indian affairs of the department of the interior; the division of welfare of the postoffice department, and the bureau of animal industry. It is planned to combine all of these reports in a single printed pamphlet, to be issued in the near future.

Personal.—Surgeon Margaret R. E. Stewart, U. S. Public Health Service, has been directed to proceed to Oteen and Biltmore, N. C., and Greenville, S. C., to study facilities for the care and treatment of tuberculous patients in the U. S. Veterans' hospitals at those places.——At the annual meeting of the National Medical Association, Dr. John P. Turner, Philadelphia, former president of the association, was elected chairman of the Colored Medical Inspectors of Schools of the United States.——Major Garfield L. McKinney, M. C., U. S. Army, sailed for America, August 26, on the U. S. liner *Susquehanna*, from Bremen.——Dr. George W. McCoy, U. S. Public Health Service, will sail shortly for Europe, where he will visit the various cities to obtain information in regard to the regulation and manufacture of viruses, serums, toxins and analogous products in the interstate traffic.——Dr. Henry Adsit, Buffalo, has been appointed chairman of the national hospitalization committee of the disabled American veterans of the World War, and will represent the disabled ex-service men on the federal hospitalizations committee, in charge of Brig.-Gen. Charles Sawyer. ——Dr. R. J. Reece and Dr. Philip G. Stock of the ministry of health, London, arrived in New York, September 1, on the *Berengaria*. They will study the American methods of handling epidemics.——After three and a half years' research work in pathology at the University of Oxford, for the British Medical Research Council, Dr. H. F. Pierce has become associate in physiology in the medical department of Columbia University, New York.——Dr. Roy Upham, Brooklyn, Dr. Walter E. Welz, Detroit, and Dr. Alexander DeWitt, Detroit, sailed, September 2, on the *America*, for channel ports and Bremen.

LATIN AMERICA

Elephantiasis in Venezuela.—Elephantiasis, or *infundia*, as it is called in Venezuela, is very prevalent in that country, as shown by Dr. P. D. Rodriguez Rivero, in his illustrated report submitted to the Third Venezuelan Medical Congress. Few of the Venezuelan cases seem to be actually caused by filariae. In one of Rodriguez Rivero's cases, the appearance of the disease apparently was related to bites by a very large ant (bachaco), the bite of which usually causes fever.

Personal.—Prof. Bonorino Udaondo is being congratulated on the new lecture hall which now completes his course on semeiology and his service at the Alvear Hospital, Buenos Aires.——The Dr. E. Wilde prize for 1921 was recently awarded to Dr. R. Rey of Buenos Aires for his thesis, "Prevention of Scoliosis in the School."——Dr. A. Noceti, professor at the University of Buenos Aires, has been granted a year's leave of absence for a trip to Europe.——Dr. Paulo Parreiras Horta is on his way home to Rio de Janeiro after several months abroad.——Dr. Carlos Dominguez of Buenos Aires was the guest of honor at a luncheon recently to celebrate his appointment as chief of the service at the Hospital Rivadavia.

FOREIGN

Roentgenology Compulsory in Roumania.—The *British Medical Journal* states that roentgenology has recently been made a compulsory subject for the medical curriculum in Roumania.

Plague in Palestine.—An outbreak of plague, with fourteen cases and two deaths, was reported from Jerusalem during the week ending July 10. The outbreak occurred in the native quarter of Jaffa.

New Chinese Medical Journal.—The *Caduceus* is the name of a new medical journal recently published in China and edited by C. Y. Ng. It is the official organ of the Hongkong University Medical Society and will be published three times yearly.

New School of Nursing at Lille.—It has been announced that the new hospital nursing school is to be opened at Lille in October. The urgent need of nurses in this industrial area led to the formation of a committee who developed plans for a nursing school and collected the necessary funds. The school is being organized under the name of the Maison Ambroise Paré. Instruction in nursing will be given by nurses from the Florence Nightingale School in Bordeaux.

Russian Surgical Congress.—The fifteenth Russian Surgical Congress will be held, September 25 to October 1, at Petrograd, it has been announced by Prof. J. Grekow, president of the Pirogoff Surgical Society of Petrograd. Accommodation will be provided for foreign visitors to the congress, and steps taken to secure lodgings, food and reduced railway fares. A meeting of welcome will be held, September 24. All communications should be made to the secretary of the surgical society, Dr. (Docent) Melnikoff, Petrograd 33/35, F. Nishegorodskaja.

Chinese Society News.—The Peking Branch of the National Medical Association of China was recently organized in that city with the following officers: president, Dr. S. P. Chen; vice president, Dr. Fong; English secretary, Dr. A. W. Woo; Chinese secretary, Dr. Chi Po, and treasurer, Dr. George Char.——The Scientific Terminology Association held its annual conference, July 4-12, at Kiangsu. Dr. C. V. Yui is chairman of the terminology committee, and has prepared a petition to the ministry of the interior, asking recognition of the new nomenclature passed by the committee. This was one of the resolutions passed at the last medical conference in Shanghai.

Epidemics in Shanghai.—The *National Medical Journal of China* states that, since last fall, Shanghai has been in the grip of an epidemic of communicable diseases, which has caused a marked increase in the death rate of the community. Smallpox in November caused 43 per cent. of the deaths in Shanghai, scarlet fever and measles following closely on the epidemic of smallpox. Both of these diseases have occurred this year in virulent form. The Shanghai Health Department has issued a report warning against measles and other respiratory diseases. During the epidemic, the National Medical Association of China and the Shanghai Medical Society held monthly meetings for discussion of the subject.

Type for the Blind Which Others Can Read.—Our French exchanges mention that the recent annual congress in France for the amelioration of the condition of the blind unanimously voted in favor of the Cantonnet-Nouet system of writing as a means of communication between the blind and the seeing. A resolution was adopted urging that this system be taught in the schools for the blind in addition to the Braille system. Cantonnet gives a fully illustrated description of his method in the *Journal des praticiens* **36**:520, 1922. It is printed like the Braille, with a punch, but the holes are made to correspond to the outlines of the letters, so that the words can be read at a glance. It does not take the place of the Braille, but supplements it for those who do not understand the Braille.

International Vocational Conference.—The *Policlinico* gives the details of the Third International Conference on Tests to Aid in Choice of a Vocation. This conference is to be held at Milan, October 1, and a permanent exposition has been arranged of instruments, films, etc., to aid, it is said, in the application of *psicotecnica all' orientamento professionale*. Five subjects have been appointed for discussion: "Professional Attitudes," "Natural and Acquired Attitudes," "Psychologic Analysis of Work," "Professional Guidance in Choice of a Trade and Taylorism," and "International Standardization of Tests and Individual Card Records." The address of the secretary is Via S. Barnaba 38, Milan, Italy, Segretariato dell III Conferenza Internazionale de Psicotecnica. Dr. J. M. Lahy is secretary of the international committee.

International Research Council.—The annual meeting of the council was held at Brussels, July 25-29, under the presidency of M. E. Picard, secretary of the Académie des sciences, Paris. Twenty countries have now joined the International Council, the following seventeen being represented at the meeting: Belgium, Canada, Denmark, France, Great Britain, Greece, Holland, Italy, Japan, Norway, Poland, Spain, Portugal, Sweden, Switzerland, Czechoslovakia and the United States of America. At a previous meeting of the council, it had been provisionally agreed to unite medical and biologic science. This decision did not find favor, and the intention now is to separate medicine from physiology, zoology and botany. Proposals will be submitted to the countries belonging to the council and the ultimate formation of this union will depend on the number of countries willing to join. M. E. Picard was elected president, and Sir Arthur Schuster, general secretary, of the executive committee appointed by the general assembly.

The French Academy of Medicine and Proposed Resolution on Alcoholism.—Monsieur Bordet recently proposed that the Academy of Medicine should pass a resolution condemning categorically the sale of alcoholics. It is well known that the restrictive measures that have been in force since the armistice were seriously opposed by a certain parliamentary group. The resolution, the importance of which is considerable, was passed unanimously. We quote these lines from the proposed resolution to show that the campaign against alcoholism is in the forefront of public thought and endeavor:

> At the present time, when, under the domination of interests that are quite evidently commercial, a very active campaign is being waged against all forms of legislation looking toward the suppression of alcoholism, the Academy of Medicine regards it as its duty to emphasize anew the necessity of strictly prohibitive measures. Alcohol is a poison. The only thing that, strictly speaking, can be alleged in excuse of its use is that, like other poisons, the smaller the dose the less dangerous it is, and that we can, therefore, without our health suffering gravely, tolerate a very moderate consumption of beer and wine; that is, diluted alcohol. If the time is not opportune to prohibit the use of beer and wine (which has never been planned as yet), provided these beverages do not contain a higher percentage of alcohol than the law might reasonably establish, at least distilled alcohol should be absolutely prohibited, since it is a veritable social scourge and a formidable factor in physical and moral decadence, as well as in poverty and crime. The relationships between alcoholism, on the one hand, and mental troubles and criminality on the other, are too well attested by demonstrations that we see all about us and by indisputable statistics to require further argumentation. The academy holds that existing legislation should be modified by suppressing the unfortunate provision which takes all the force out of the law; namely, the clause that authorizes the sale of distilled beverages in quantities of two liters as a minimum. The prohibition of distilled alcohol should be absolute and complete.

Personal.—Dr. Ruth E. Conway, Manchester, England, was recently awarded the Ashby memorial research scholarship in diseases of children of the University of Manchester. Dr. Conway will undertake an investigation of the reaction of the blood and its relation to the bicarbonate content in cases of clinical acidosis, in relation to (1) anesthesia and (2) diabetes in children.——Dr. Claude M. Lee of St. Andrew's Hospital, Wusih, recently arrived in America, on leave. Dr. Mervyn Cooper of the American Church Mission, Shanghai, will have charge of the work during Dr. Lee's absence.——Sir Humphry Rolleston has been elected president of the Roentgen Society of London.——Dr. Michael C. Grabham, Madeira, has gone to Porto Santo, the northern island of the Madeira group, to study the conditions under which the local race of Portuguese inhabitants are said to be completely immune from dental caries. The inhabitants possess huge, ugly, yellow, but sound teeth. Dr. Grabham will take specimens to London.——Prof. G. Faraci of Palermo was assaulted

by bandits in front of his home but escaped without serious injury.——A committee has been formed to collect subscriptions for a fund which will enable Prof. Pio Foa to continue his scientific research when he reaches the age limit for his university position next year. The secretary of the committee is Prof. C. Gamna, via Pietro Giuria 15, Turin.——Prof. Pio Colombini has presented the University of Modena with important works on dermatology and syphilology, including the works of Morgagni in a rare and magnificent antiquarian edition.——The *Klinische Wochenschrift* states that Professor Lichtwitz, the physician in charge of the city hospital at Altona, is appealing to physicians who have gout to send him a report on their condition. He is preparing the chapter on gout for a new edition of a standard textbook. His address is Städt. Krankenhaus, Altona (E.), Germany.——It is announced that the director of the physiology institute at Berne, Professor Asher, is to be an interchange lecturer in the United States this year.——Prof. A. Depage has been awarded the five-year prize in the medical sciences offered by the Belgian Académie de médecine.

Deaths in Other Countries

Surg.-Com. **James G. Wallis,** Royal Navy, who received the prize for tropical diseases at Haslar, died recently at Plymouth, England.——Dr. **Marriot L. Rowan,** superintendent of Derby County Asylum, England, aged 51.——Lieut.-Col. **James Young,** Bengal Medical Service; veteran of four wars; in England, July 13, aged 76.——Dr. **Arthur M. Sheild,** dermatologist and consulting surgeon to several London hospitals; author of "Diseases of the Breast"; August 4, aged 64.——Dr. **E. H. E. Stack,** ophthalmic surgeon; recently, aged 55, at Bristol, England.——Dr. **Andrew M. Neethling,** veteran of the South African and World War; member of the first Union Parliament of South Africa; July 6, at Pretoria, aged 67.——Dr. **Rintaro Mori,** president of the Imperial Museum of Japan, surgeon and author; in Tokio, following a long illness.——Dr. **Juan Santos Fernández.** No mail has been received this week from Cuba, but our Argentine exchanges mention the death of the internationally known ophthalmologist and hygienist of Cuba, Dr. Juan Santos Fernández, aged 75. He founded the monthly *Crónica Médico-Quirúrgica* and was co-founder of two other journals. He founded further various scientific institutes and laboratories and is said to have been the pioneer in introducing Pasteur treatment for rabies into America. He was a frequent contributor to medical and other periodicals and to international medical gatherings, and an honorary member of various ophthalmologic and other societies. The list of his publications counts up to over a thousand. His seventieth birthday was celebrated at Havana in 1917 with great ceremony, and a gold medal was presented to him with tributes from far and near.——Dr. **G. Udaondo,** of Buenos Aires, at one time professor of pathology and later governor of the province of Buenos Aires.——Dr. **Juan Guglielmetti** of La Plata, a leader in experimental medicine and instructor in physiology at the University of Buenos Aires, and professor at La Plata, author of important reports on the action of emetin, curare, epinephrin, quinidin and snake poison, aged 33.——Dr. **Ramón Gil Barros,** professor of histology and gynecology at the University of Córdoba, of which he was dean for several terms, besides serving three terms as mayor.——Dr. **E. Cucchiari** of Milan, victim of a motorcycle accident, aged 24.——Dr. **T. Panzer** of Vienna, author of numerous works on medical chemistry.——Dr. **Alvaro de Barros,** professor of nervous and mental diseases of the Bello Horizonte faculty of medicine.——Dr. **Durval Fernandes de Castro.** The *Brazil-Medico* mentions the death at Nictheroy from epidemic encephalitis of this officer of the public health service, inspector general for the state of Rio de Janeiro.——Dr. **H. Rorschach,** a prominent psychiatrist of Zurich, author of the Rorschach experiment in diagnosis of mental disease. The *Schweizerische medizinische Wochenschrift* in the obituary, July 20, describes this new diagnostic test.

CORRECTION

Film Treatment of Burns.—In the summary on page 858 of de Moraes' favorable report on film treatment of burns, the formula advocated should read: "Equal parts of paraffin and petrolatum, with a melting point of 40 C., and perfumed."

Government Services

Surgeon-General Ireland Reappointed

Announcement is made that Major-General Merritte W. Ireland has been reappointed Surgeon-General of the Medical Corps of the U. S. Army.

Hospital for Veterans in Virginia

Director Forbes has announced that a new $1,500,000 hospital for disabled veterans will be erected at either Goshen, Va., or Penn Springs, W. Va. The new institution will care for disabled ex-service men of the Veterans' Bureau district comprising Maryland, Virginia, West Virginia and the District of Columbia.

Major Fraser Resigns

Major Leon Fraser, Ph.D., assistant director, U. S. Veterans' Bureau, now in Europe, has resigned. Major Fraser sailed from New York, June 24, to make a survey of Veterans' Bureau beneficiaries in Europe and to make arrangements with the American consular officers relative to the care and treatment of disabled American ex-service men on the continent. The French government recently decorated Major Fraser with the Order of the Silver Poilus, and he was also made an Officier d'Académie.

Retirement of Medical Officers

It is stated at the office of Surgeon-General Ireland that the recent legislation passed by Congress for the benefit of Army officers about to be retired does not apply in any respect to officers of the medical department of the Army. It is estimated that, under the Army reduction program, 144 medical officers will be reduced or retired. Many must go out of the service with a year's pay or go on the retired list with inadequate compensation. The recent remedial legislation applies only to line officers of the Army. It is helpful to such line officers only to the extent that it materially reduces the number that will have to be eliminated by retirement or discharge by a total of 500. Unless there is further legislation, which is already in contemplation, it is generally recognized that the elimination program is certain to work unwarranted hardships and eliminate medical officers and others who, by reason of long and faithful service and efficiency, should be retained in the service.

New Units in Reserve Corps

The Surgeon-General of the Army announces the establishment, as a new unit in the organized reserves, General Medical Laboratory No. 1 (Slee Laboratories, Swiftwater, Pa.). The following appointments are also announced: Col. Richard Slee, Swiftwater, Pa., commanding officer, General Laboratory No. 1; Major Carl Boettiger, Forest Hills, L. I., epidemiologist, First Army Medical Headquarters; Major Graeme Monroe Hammond, New York, neuropsychiatric consultant, First Army Medical Headquarters; Major W. J. Highman, New York, urologic consultant, First Army Medical Headquarters; Col. F. H. Albee, New York, orthopedic consultant, First Army Medical Headquarters; Col. Hans Zinsser, New York, sanitary inspector, First Army Medical Headquarters; Col. H. F. Swift, New York, medical consultant, First Army Medical Headquarters; Col. W. H. Davies, Jamaica, L. I., assistant sanitary inspector, First Army Medical Headquarters; Col. H. H. M. Lyle, New York, surgical consultant, First Army Medical Headquarters, and Capt. O. R. Sevin, St. Louis, chief of surgical service, General Hospital No. 21.

Memorial Tablet for War Dead

In the new Army Medical School Building, which is now in course of construction at Walter Reed General Hospital, Washington, D. C., a large bronze memorial tablet will be erected. Necessary funds for this purpose will be received by voluntary contribution, each contribution being limited to

$1 and the list of contributors restricted to those who saw service as officers, nurses or enlisted men of the medical department during the World War. Each subscriber to this memorial will receive an official acknowledgement and receipt.

The placing of this tablet in this great building, which is located in a medical center, cannot fail to prove of vital interest to thousands of physicians, dentists, veterinarians, nurses and enlisted men who took part in the recent world conflict, and the fact that the cost of the tablet is to be borne exclusively by those who engaged in medical department activities, and the further fact that it is in memory of those who fell while so engaged, will possibly incite the feeling that a contribution of $1 toward this beautiful memorial is more of a privilege than duty.

The tablet reads:

IN MEMORY
OF THE
OFFICERS, NURSES
AND ENLISTED MEN
OF THE
MEDICAL DEPARTMENT
UNITED STATES ARMY
WHO LOST THEIR LIVES
DURING THE
WORLD WAR
THIS TABLET IS ERECTED
BY THEIR COWORKERS OF
THE MEDICAL DEPARTMENT

Former medical department workers are invited to subscribe an amount not to exceed $1 for its purchase and installation. Fellow workers who desire to contribute $1 toward this memorial are invited to forward this amount to Lieut.-Col. Paul C. Hutton, M. C., Office of the Surgeon-General, Washington, D. C.

Foreign Letters

PARIS

(From Our Special Correspondent)

Aug. 25, 1922.

Vaccine Therapy in Otorhinolaryngology

Among the subjects discussed at the congress of the French Society of Otorhinolaryngology, which was held recently in Paris, vaccine therapy was one of the most interesting. The report was made by Drs. L. Baldenweck of Paris, M. Jacod of Lyons, and Moulonguet of Paris.

They stated that the best results are obtained in furunculosis of the nose and ear, and, in fact, in furunculosis in general. Vaccine therapy in such cases is curative when furuncles are in evolution, and preventive by hindering the growth of new lesions. To obtain this result, when treating recurring or multiple furuncles, it is necessary, after incision of suppurating points, to inject immediately staphylococcic stock vaccine in high doses, frequently repeated, and then to use an autovaccine to check the affection and to obtain prolonged immunization. In hay-fever, the authors did not touch upon pollen desensitization, the subject being outside the limits of their report. Bacterial vaccines should be employed only in the infectious complications of hay-fever, either at the onset of an intense attack or during the course of the affection to quiet down general symptoms. They do not advise their use as a curative treatment, as pollen desensitization is the treatment of choice, and of course they should not be used as preventive treatment. In ozena, atrophic rhinitis, they recommended the use of an autovaccine made from cultures in both aerobic and anaerobic mediums, and they report in cases treated with this method 20 per cent. failures, 45 per cent. improvement, and 35 per cent. cures; in other words, 80 per cent. favorable results in cases in which all other treatments had failed.

In recurring coryza, they based their report especially on American observations, and it shows that results are variable. However, vaccine therapy during the course of acute coryza should be cautious. In chronic mucopurulent rhinopharyngitis without sinusitis, results are more encouraging, especially when the staphylococcus is to blame, whether alone or associated. In this case autovaccines are best. Vaccine therapy is not indicated in frank acute sinusitis. It is better indicated in dragging acute sinusitis to activate the tardy recovery. In chronic sinusitis, results may be expected only when the affection is of recent date and when the lesions are localized in the mucous membrane, and provided there is no acute purulent retention. In acute otitis media suppurativa, not taking into account the abortive method by intravenous injections, which is still in course of study, results are not encouraging. We must be very cautious in the first phases of acute otitis, as vaccine therapy seems to increase the chances for complications without influencing the duration of cases without complications. Thus, vaccine therapy may be dangerous, they reiterate, in these particular conditions.

In chronic otitis media suppurativa accompanied by osteitis, granulations or cholesteatoma, vaccines were a complete failure. On the other hand, 63 per cent. of cures were realized with autogenous vaccines in tubal otorrhea. As regards mastoiditis, they believe that vaccine therapy must give the precedence to surgery, and that operative indication should not be modified. The same is true in intracranial and general complications of otitis. In such cases it is difficult to appreciate the influence of vaccination on very grave manifestations with irregular clinical evolution.

Dr. Portman of Bordeaux stated also that vaccine therapy should never delay surgical intervention. As regards furunculosis, stock vaccine and Delbet's bouillon should be given a prominent part in its treatment. The reactions may be violent, but they are harmless, provided vaccines are used with patients who are not cachectic and not suffering from serious septicemia, and the heart and kidneys are in perfect condition. On the other hand, Dr. Brindel of Bordeaux is not in favor of vaccine therapy in ear affections, except for furunculosis of the external auditory canal. Drs. Worms and Delater of Paris, impressed with the importance of the streptococcus in the infections of mucous membranes connected with the rhinopharynx, tried an antistreptococcus vaccine. Results were variable in simple or complicated acute sinusitis, chronic sinusitis, and acute otitis media and their complications; consequently they insist on the importance of surgical treatment.

Visits of Spanish Physicians to French Universities

I mentioned in a previous letter the visits made by a group of French physicians to various Spanish universities (THE JOURNAL, April 1, 1922, p. 985). In turn, several Spanish physicians will visit French universities. The first trip will be organized by the director of the *España Médica*, and the Spanish physicians will visit Paris and probably Lyons. A second tour will take place under the direction of Professor Recasens, dean of the Faculty of Medicine of Madrid. Professors Marañon, Tapia and Pittaluga will be included in the party. They will visit Bordeaux, Paris, Strasbourg, Lyons and Montpellier.

The Diploma of Veterinary Physician

There are in France three veterinary schools, situated in Alfort (near Paris), in Lyons and in Toulouse. The course of study in these various schools is of four years' duration. They are under the direction of professors, of whom some have attained scientific eminence. We could name among those who have passed away Nocard of the Alfort school, well known for his works on tuberculosis; Arloing at Lyons, and many others. Unfortunately, up to the present time, these schools awarded only a diploma of "veterinary," with-

out the degree of doctor, and this was an obstacle to the recruiting of students. To remedy such conditions a bill has been introduced for the creation of the degree of veterinary doctor. Certain rules will determine the guarantees required for the conferring of the diploma and conditions under which it will be awarded to those who have already a veterinary's diploma. The bill provides a fine of from 500 to 10,000 francs for those who assume illegally the title of veterinary doctor or who, without being a doctor of medicine, do not mention the title of veterinary after that of doctor. In this way all confusion will be avoided.

The Examination for Hospital Interns

The recent examination for admission as intern in the Paris hospitals has been the subject of lively discussions. For the first time the new selective system was in operation from which is published a list of candidates for final tests. This selective system requires the written examinations to be handed to the jury anonymously. This system has been introduced to prevent favoritism, and when the list of candidates admitted to the final examination was read before the judges they were surprised to learn that the names of certain candidates known by them as capable of passing the examination were not included. Protests were made against the anonymous system of examinations, but an inquiry among hospital physicians and surgeons revealed that most of them were in favor of this method.

Appeal to Scientists for the Reduction of Chemical Warfare

The commission for the reduction of armaments sent to the commission of intellectual cooperation a request concerning the cooperation of the scientists of the world for the publication of discoveries pertaining to toxic gases and the development of chemical warfare. The commission of intellectual cooperation decided that an appeal to scientists requiring them to publish discoveries concerning toxic gases would be useless, for it would not be heeded, and no means could be devised to make it effectual.

Monument to Monprofit

A monument is to be erected in honor of the surgeon, A. Monprofit, professor of the Angers faculty of medicine, who died several months ago.

Relief for Russian Children

Monsieur Gilson, lecturer at the Sorbonne and director of studies at the Ecole des hautes études religieuses, left recently to inspect the French relief stations organized in the region of the Volga by the French relief committee for children, and to visit places at present preyed upon by famine, particularly in Ukraine, and study conditions under which new relief stations could be opened. The soviet government gave the necessary authorization to facilitate the accomplishment of his mission.

French Scientific Delegation to Brazil

The French delegation sent to Rio de Janeiro for the celebration of the centenary of Brazilian independence comprises, among others, Dr. Pierre Janet, professor of the Collège de France; Dr. Georges Dumas, professor of experimental psychology at the Sorbonne, and Dr. Chiray, associate professor of the Paris faculty of medicine.

Another Victim of the Roentgen Rays

Dr. J. Bergonié, professor of clinical medical electricity and biologic physics of the faculty of medicine of Bordeaux, has had to have his right arm amputated. Several years ago two fingers of his right hand were removed on account of radiodermatitis of the hands.

The Library of Professor Lacassagne

Dr. Lacassagne, who was formerly professor of medical jurisprudence (Faculté de médecine, Lyons), has bequeathed to the city of Lyons his library, containing more than 12,000 volumes, which is especially rich in criminal anthropology, the argot of thieves, tattooing, peculiar customs of prisoners, etc.

LONDON

(From Our Regular Correspondent)

Aug. 21, 1922.

Report of the War Office Committee on Shell Shock

In August, 1920, the army council appointed a committee to consider the different types of hysteria and traumatic neurosis commonly called shell shock; to collate the expert knowledge derived by the service medical authorities and the medical profession from the experience of the war, with a view to recording for future use the ascertained facts as to the origin, nature and remedial treatment of shell shock, and to advise whether by military training or education, some scientific method of guarding against its occurrence can be devised. The committee consisted largely of military and naval medical officers who themselves had considerable experience with shell shock in the war, and included neurologists, such as Mott and Turner. They held forty-one sittings and heard evidence from a number of distinguished men, representing opinions on the military, medical and legal aspects of the subject. They also received the evidence of officers and men who had suffered from shell shock. They have made a lengthy and exhaustive report, which must long remain the most authoritative work on the subject.

At the outset, they decided to treat shell shock under the heads: 1. (*a*) Commotional disturbance and (*b*) emotional disturbance. 2. Mental disorders. They found that the term shell shock has been a gross and costly misnomer and should be eliminated from the nomenclature. The war produced no new nervous disorders, but, owing to special conditions, these disorders appeared in some cases in an aggravated form. They are divisible into three main classes: 1. Genuine concussion without visible wound as a result of shell explosion. Such cases were relatively few. 2. Emotional shock, either acute in men with a neuropathic disposition, or developing slowly as a result of prolonged strain and terrifying experience, the final breakdown being sometimes brought about by some relatively trivial cause. 3. Nervous and mental exhaustion, the result of prolonged strain and hardship. In many cases the three factors of commotional and emotional shock and exhaustion were combined.

CAUSATION OF SHELL SHOCK

Any type of person may suffer from one or another form of neurosis if exposed for sufficient time to the conditions of modern warfare. It is extremely difficult to say beforehand what type of man is most likely to break down. But there are certain persons who are unlikely ever to become efficient fighting men. Much can be done through training. The more gradual the training, the better the staying power. In prevention, the inculcation of morale and discipline stands first. Included under morale are pride of regiment, belief in the cause, confidence between officers and men, and the feeling that a man is part of a corporate whole. Physical comfort, so far as circumstances allow, adequate rest and recreation are important adjuncts. But no human being, however constituted or trained, can resist the direct effect of the bursting of high explosive shells. A large proportion of soldiers who were blown up or came into the class of commotional shock showed exactly the same symptoms as those suffering from the emotional form. There was no evidence of organic injury of the nervous system, and the same causes

that are at the root of the emotional form were found. There was, for instance, a family history of tuberculosis or of nervous disease, or a personal history of previous shell shock or of neurosis.

EMOTIONAL SHELL SHOCK

Emotional shell shock is a term used to imply that the exciting cause is emotional. Though common on the battlefield, it may be acquired elsewhere. It was common on home service and, in its hysterical form especially, often developed after weeks of absence from the scenes of fighting. It formed about 80 per cent. of all cases, and was brought about by a variety and combination of causes. There was first some kind of mental or physical exhaustion of a cumulative nature; then some emotional disturbance acted as an exciting cause. The conditions determining exhaustion included noise, loss of sleep, fatigue, discomfort, insufficient food, immoderate use of alcohol, infectious diseases, the pain of wounds and sores, and poison gases. All soldiers have fear, but this state is generally controlled. In the large majority of cases of emotional shell shock, there was in the family or personal history evidence of weakness or instability of the nervous system.

COMMOTIONAL SHELL SHOCK

The bursting of a shell may cause commotion of the nervous system by direct aerial percussion and repercussion in closed spaces. Most of the witnesses stated that they had seen men lying dead from a shell explosion without any visible injury, but few of them could give evidence proving that death had been caused by aerial percussion. In such cases, postmortem examination of the brain detected no changes visible to the naked eye, but microscopic examination revealed ruptures of small vessels, with hemorrhage. This may be correlated with the finding of blood in the cerebrospinal fluid in some cases, on lumbar puncture. Similar punctiform hemorrhages have been found in carbon monoxid poisoning in civil life, and this cause may have been in play in the war cases, men rendered unconscious by the explosion being buried or blown into a sap where this gas was present. The immediate effect of commotional shock is loss of consciousness, which may last from a few minutes to several days. There is complete loss of memory of the accident and of the period immediately before and after it. Evidences of physical injury, such as rupture of the tympanum, epistaxis and signs of organic injury of the central nervous system, are often found. As consciousness is regained, various symptoms may be present—headache, pain and stiffness of the neck, vertigo, drowsiness. In the early stages, the reflexes are usually depressed, but they later become brisk or even exaggerated, and there may be fine tremors of the limbs. The most important symptom in the distinction from the more common neuroses of emotional origin is the absence of emotional instability.

With regard to the question whether shell shock should rank as a battle casualty, the committee make the following recommendations: 1. Concussion or commotion attended by loss of consciousness and evidence of organic lesion of the central nervous system or its adjacent organs (such as the tympanum) should be classified as a battle casualty. 2. No case of psychoneurosis or mental breakdown, even when attributable to a shell explosion, should be classified as a battle casualty, any more than sickness or disease is so regarded. 3. In all doubtful cases, it is desirable to have the classification determined by a board of expert medical officers, after observation of the patient in a neurologic hospital.

COWARDICE AND SHELL SHOCK

As to the distinction between cowardice and shell shock, the committee contents itself largely with quoting evidence. The question is of great importance, as cowardice is a military crime for which the death penalty may be exacted. The committee describes cowardice as lack of, or failure to show, requisite courage; but the brave, after much stress, may temporarily fail to show their wonted courage without deserving the opprobrious term. Fear is the chief factor in both cowardice and emotional shell shock; it is an emotion common to all, and very brave men, who gave evidence, frankly acknowledged it. It is obvious that fear alone does not constitute cowardice. Prof. G. Roussy of the French army, who gave evidence, noted the difficulty of distinguishing between cowardice and emotional shell shock. He defined cowardice as lack of self-control in the presence of danger; but Dr. E. Mapother, medical superintendent of the Maudsley Neurological Hospital, was "not prepared to make a decision between cowardice and shell shock." Shell shock he regarded as "persistent and chronic fear." Dr. W. Johnson, a neurologist, thought that when symptoms of fear—tremors, sweating and tachycardia—persisted or revived on slight emotional stimulation, a psychoneurosis was present.

COURT MARTIAL CASES

As regards expert medical advice and evidence in court martial cases, the system pursued in France in the late war seems to have been satisfactory. When any medical question or doubt arose before or at a trial, or on subsequent review of the proceedings, the best possible expert advice available was placed at the disposal of the authorities. The committee conclude that: (1) The military aspect of cowardice is justified; (2) seeming cowardice may be beyond the individual's control; (3) experience and specialized medical opinion are required to decide in possible cases of war neuroses of doubtful character; (4) a man who has proved his courage should receive special consideration in case of subsequent lapse.

Does the Unconscious Exist?

The unconscious mind figures largely in the flood of books and articles on psychotherapy marking the last few years, and the apparent contradiction of terms which the expression involves has proved a stumbling block to some students of the subject. In Manchester, a congress of philosophers and psychologists has recently been held, at which a discussion took place on the topic "Does the Unconscious Exist?" As many of the speakers were eminent men unconnected with the medical profession and therefore, with a purely philosophic standpoint, a new light was shed on this difficult question. Mr. G. C. Field, in opening the discussion, denied all value of the conception of the unconscious, first, on the negative grounds that it was neither necessary nor useful, and that its functions could equally well be fulfilled by speaking of physical processes; secondly, on the positive grounds that its use led to sham explanations and confused things which should be kept distinct, such as "the storehouse of memories" and "mental dispositions." Dr. Aveling, on the other side, maintained that psychology as a science must not appeal to causes beyond its own realm, such as physical processes. We are aware of no processes save mental ones and, therefore, the "beyond" must be of a similar character, even if it is paradoxical to speak of "conscious unconsciousness." The alternative explanations by traces in the brain or by "tendencies" were much less adequate than the unconscious. Two medical psychologists, Dr. Mitchell and Dr. William Brown, insisted that experience in nervous cases forced on them, as on Dr. Morton Prince, the hypothesis of the "unconscious." Only the philosophers could afford to be lighthearted about it. The hypothesis, obscure as it might be, worked better than any alternative, and that was why they used it. The librarian of Harvard University, after a warm tribute to English psychologists, ranged himself on the side

of those who wished to banish the unconscious into the limbo of false science. Dr. Aveling, in reply, admitted that the term unconscious was inappropriate, but held the field. He could not appeal to physical processes, because whatever other sciences were interpenetrable, he could not believe that physics and psychology were. He drove home the point, raised by Dr. Mitchell: the undeniable activity of the unconscious. Sir Leslie Mackenzie pointed out that Freud used psychologic terms only because physiologic proved inadequate.

Fatal Botulism Due to Potted Meat

The death of eight persons after eating sandwiches made from potted meat, while on a holiday in the Scottish Highlands, has caused a great sensation and for a time dealt a serious blow to the trade in canned and potted foods. They were staying in a hotel at Loch Maree, Gairloch, and had started on a fishing expedition. The sandwiches, which were made at the hotel, were eaten for lunch, August 14. The earliest symptom, diplopia, was observed in one of the victims before breakfast on the 15th. The seven others began to suffer in the course of the day, and two, both women, died on that day. The remaining six were men, of whom two died on the 16th, two on the 17th, and two on the 21st. Thus, notwithstanding prompt and skilled medical aid, every case proved fatal. In addition to diplopia, which in all cases seems to have been the first symptom, there were ptosis, dizziness, paralysis and a feeling of constriction of the throat, vomiting and collapse. The meat is said to have been supplied by a large firm of manufacturers. As soon as the outbreak was reported, the Scottish board of health despatched medical officers to the spot. Laboratory investigations are proceeding, but a preliminary announcement has been made that *Bacillus botulinus* is undoubtedly responsible.

In order to insure that materials from such outbreaks shall be fully investigated, the Medical Research Council has specialists available. It has arranged with the laboratory of Bristol University for investigations there by an expert whom it has appointed. Some time ago, the council established a canned foods committee. Antitoxins, both for diagnostic and therapeutic purposes, have been prepared, but, as in the case of tetanus, these are of little use after the symptoms of botulism are well established.

VIENNA

(From Our Regular Correspondent)

Aug. 21, 1922.

Observations on Monkeys in the Zoological Gardens of Vienna

Mr. Widholz, who for many years has been one of the chief managers of the Vienna zoo, recently published a short paper on his experiences in the acclimatization of wild animals, chiefly from the tropical zone. It had been known for a long time that monkeys especially and their near relatives were unable to live many years in captivity, as they usually fall a victim to tuberculosis. It was believed that this was due to the cooler climate, and therefore they were kept in well heated, stuffy cages and wards. It occurred to Mr. Widholz that monkeys kept in private families scarcely ever suffered from tuberculosis. A large number of postmortems on apes, conducted in the Vienna anatomic institute under Professor Tandler, demonstrated that privately kept monkeys as a rule died from diseases of the digestive organs. Among animals in the zoos, on the contrary, tuberculosis was the prevalent cause of death.

Mr. Widholz emphasizes the fact that since it has become a routine measure with him to provide the monkeys with an abundance of fresh air by allowing them to ramble freely in a garden and keeping them outdoors, their health is satisfactory. The chief problem now is the matter of nourishment. All wild animals kept in captivity suffer from want of certain substances which are necessary for maintaining good health. It is not only the adequate caloric supply and ingestion of albumins and mineral salts that must be thought of, but also certain vitamins which are derived from the food obtained by the animals in their natural state. Thus, for instance, certain mandrils did not thrive on leaves and grass, but they improved at once when grasshoppers and other locusts which had been feeding on grass were added to their menu. Furthermore, rapid change of temperature is not at all harmful to apes. In their native state, they often experience very cool nights, and days of stifling heat. Therefore, one need not be afraid of their catching cold easily. As in human beings, the open-air factor is of chief importance; in prisons or slums, man is just as prone to contract tuberculosis as is the ape in a cage without proper air supply.

As regards pathology as applied to apes, nervous conditions are noted frequently, often due to disorders of digestion; although, of course, there may be other causes. In case of a marikina (silky Tamarin), true epileptic seizures were noted. The postmortem examination revealed cerebral hemorrhage. Under favorable conditions, monkeys gave birth to healthy babies. The young ones frequently suffered from rickets; and they are cured just as human babies are by cod liver oil, fresh air and sunshine. In fact, the zoo must have a small dispensary containing sodium bicarbonate, pepsin, lime juice and astringent remedies, just as in a nursery for human beings. Other interesting observations were made on wild birds. Numerous species normally showing very bright colors became dull-feathered in spite of care, and although they were otherwise well. The bright hues, if they once disappear, seldom return in captivity. Here, too, it seems that the fault lies with the nourishment, which manifestly lacks some factor necessary for producing the "wild" color. It is known, for instance, that the ordinary canary, which should be greenish, but in captivity is yellow, turns red if fed on red pepper.

Mr. Widholz calls the attention of physiologists and breeders to the necessity of applying the rules of modern scientific observation to wild animals in captivity in our climate.

Coming Scientific Congresses

In September, the convention of the German Botanic Society and that of the German Society for the Study of Heredity will be held in Vienna. The two societies have agreed to unite for the present sessions. A large number of papers will be presented, and representatives from Sweden, Switzerland, the United States, Norway, Italy and Czechoslovakia have already announced their intention to be present. Special attention centers in the procedings of the German Society for the Study of Heredity, as reports on the latest achievements in this line will be made by Goldschmidt (Berlin), on the problem of mutation, Spemann (Freiburg), on the activation of the heredity-mass, and Rüdin (Munich), on the hereditary transmission of mental disturbances. Professor Wettstein will preside over the joint convention.

Bathing Beaches as Source of Infection

With the advent of the swimming season, there has been a recurrence of some untoward conditions complained of last year. Quite a number of persons have sought medical treatment for a sort of conjunctivitis, the characteristic features of which are swelling and hyperemia of the eyelids, with soreness of the conjunctiva and at times of the preauricular glands. Vision is much interfered with for a few days. In some instances, there is also a purulent catarrh of the nasal passages. The infection was traced to two or three of the swimming ponds frequented by working people;

but in the River Danube also, which is a favorite bathing place for the Viennese, infective material was found.

In many pools and ponds the matter of scrubbing the walls and renewing the water is not given proper attention. Although every visitor is expected to make use of the shower bath before entering the water, this prophylactic measure is not strictly adhered to. Closure of the contaminated pond was strongly advised, to prevent the spread of the conjunctivitis. Similar occurrences have been reported from Germany and France during this and the previous swimming season.

Swedish Help Against Tuberculosis in Austria

When, about two years ago, the Swedish society Rädda Barnen (Save the Children) took up its charitable work in this country, the officials were struck by the extent of tuberculous infection among the children and the poor means to fight these conditions. By contributing nearly all the funds required, all classes of the Swedish people took part in the noble enterprise initiated by this society. The result is a large, modern sanatorium, treating all sorts of surgical tuberculosis cases. It can accommodate 450 children, and is prepared to provide treatment for months or years, as necessary. Opportunities for schooling are also provided. The staff consists of two internists and four surgeons, and consultants are called in when necessary. Heliotherapy, with open-air treatment (Rollier's system), is employed widely, and it is the aim of the institute to avoid all procedures likely to result in subsequent crippling. People are encouraged to give their suffering children a chance of recovery, for the institute welcomes the poorest guest.

A booklet published by the institution contains several popular articles by competent specialists emphasizing the fact that permanent cure is a probability if the disease is attacked early enough, and that the sacrifice on the part of the parents in sending their children away for a year or so is a boon to the poor creatures, otherwise sure to become cripples.

The institute is one of the finest and largest of its kind in the whole of Europe.

Regulation of Medical Fees

The constant drop in the value of Austrian money has placed the medical profession, among other classes, in a very serious position. While all wage earners, laborers, state officials, in short, the recipients of periodic payments, have received increases in their incomes offsetting the depreciation, physicians are not able to command fees raised in proportion to the rise in the cost of living. Especially handicapped are those who are accustomed to send out yearly or half-yearly bills; for when they finally get the money, it has only a fraction of the buying value it had at the time when they rendered their services; and there has been no legal possibility of charging increased fees equivalent to the value of the money at the time of payment.

Therefore, the medical councils had to settle this problem, and a system has been adopted whereby patients are charged fees differing according to the country they come from. Foreigners are expected to pay fees equal to or nearly as high as they have to pay in their own country. For Austrians, a certain index is being fixed every month, showing how many times the prewar fee, paid in full-valued money, is to be multiplied when charging the present fee. As a rule, the index was and is much below the average proportion of the rise in the cost of living. When this system was first put in force, the index was fixed at eighty, i. e., a physician who in prewar times charged 5 kronen for a consultation at his office was expected or rather advised to charge 400 kronen for the same service; but at that time the dollar was worth more than 1,600 kronen here. It is true that the index was meant to serve as a minimum below which no physician was expected to go in his charges.

Since that time, the medical organization has undertaken the task of publishing monthly the index figure, bringing it to the knowledge of both the profession and the public. This index has been constantly going up; it went at first to 100, 150, 200; later on, it went to 500, 800, 1,200; and for the month of August 2,000 has been fixed. This means that a man who in peace time charged 5 kronen should charge now at least 10,000. But what in peace was equivalent to one dollar is now only a fraction of it; for the depreciation of money is so great that a dollar is here worth 70,000 kronen, and it is impossible for an Austrian patient to pay the equivalent of the present value of an American dollar as a regular fee.

Specialists are expected to charge double this amount, or 20,000 kronen, as their fees were in peace about 10 kronen ($2), and operations now cost between 150,000 and 800,000 kronen, equivalent to the present value of from $2 to $11. These figures show the hardships which the medical profession is suffering from as the after-effects of the war. For the physician must pay for his food and clothing and his fuel and general upkeep the full exchange rate, or between 10,000 and 14,000 times the peace price; but he earns only one fifth or one seventh of his peace fees. To make both ends meet, he must work many more hours than before, and thus time which might be devoted to study or research is taken up by sheer "bread work," to the detriment of his scientific advancement.

In order to do away with the system of belated payment of bills, the public is repeatedly informed, through the press, that physicians have decided to send their bills after the final treatment; at the latest, at the end of each calendar quarter. Bills not paid a fortnight after being sent will have to be paid according to the index in force at the time of actual payment. This stand taken by the organization has lately received the approval of law courts, for, in several instances, when physicians refused to accept payment of older bills in the present deteriorated money, and claimed a proportionately higher amount, the question came before the court, which decided in favor of the physician. Gradually, the public is awakening to the conviction that the physician has to be paid for his services, just as well as tradesmen or lawyers or craftsmen, and, as they ask for their own payment, according to the depreciation of the currency.

Marriages

GRANT EBEN WARD, Baltimore, to Miss Lillian Anderson Hersperger of Buckeystown, Md., August 16.

KENNETH VAUGHAN, Yakima, Wash., to Miss Esther Dollenbacher of Yakima, July 26.

DEAN WENTWORTH MYERS to Miss Eleanor Sheldon, both of Ann Arbor, Mich., August 19.

JOSEPH HAUCK, Terre Haute, Ind., to Miss Jessie Leasure of Oakland, Calif., June 26.

REUBEN H. D. BITTER to Miss Marie Klees, both of Oshkosh, Wis., in August.

JOHN W. NUZUM to Miss Mary Louise Smith, both of Chicago, September 2.

BIRD MCPHERSON LINNELL to Miss Julia G. Zenos, both of Chicago, September 9.

JUDGE P. STANLY, New Bern, N. C., to Miss Rosie Annie Farrington, recently.

WILLIAM H. FINNEY to Miss Elsie Luebke, both of Clintonville, Wis., recently.

HELENE DOETSCH to Rudolph Michel, both of Baltimore, August 30.

Deaths

William Stewart Halsted ⊕ professor of surgery at the Johns Hopkins Medical School since 1889, died, September 7, aged 70, following an operation for gallstones performed August 25. Dr. Halsted was born in New York, Sept. 23, 1852. He received his A.B. degree from Yale University in 1874, and his M.D. from the College of Physicians and Surgeons of Columbia University in 1877. Following his graduation in medicine he studied at the Universities of Vienna, Leipzig and Würzburg. In 1881 he was attending physician at the Charity Hospital of New York, from 1885 to 1887 attending surgeon at the Bellevue and Presbyterian hospitals, at the Roosevelt Hospital and the Emigrant Hospital, New York. In 1889 he went to Baltimore to accept the chair in surgery in the Johns Hopkins University. In 1913, when the Johns Hopkins school put the chair on a full-time basis, Dr. Halsted accepted the position, giving up an extensive private practice.

During his career, Dr. Halsted reported many surgical discoveries of importance. In 1884 he first performed refusion of the patient's own blood after defibrination in carbon monoxid poisoning; he ligated the subclavian artery in the first portion with success; he devised the well known supraclavicular operation for cancer of the breast, and, coincident with Bassini, the well known operation for hernia. In experimental surgery he reported methods for suture of the intestines, occlusion of the aorta, transplantations of the parathyroid, experimental surgery of goiter, and many other procedures. He was a conspicuous example of the great surgical teacher. Among others who came under his guidance were Drs. Finney, Bloodgood, Cushing and Heuer. He is credited with the introduction of gutta-percha in 1880; rubber gloves, 1890, and silver foil dressing, 1896. Professor Halsted was a fellow of the American Surgical Association, the American Academy of Arts and Sciences, and the American Society of Pathologists and Bacteriologists. He was also an honorary fellow of the Deutsche Gesellschaft für Chirurgie; of the Association Française de Chirurgie; of the Royal Swedish Academy of Science; of the Societas Medicarum Sveeana, Stockholm, and of many other foreign surgical societies. He was made honorary fellow of the Royal Society of Surgeons of England, in 1900, and received the LL.B. degree from Yale and the D.Sc. from Columbia, in 1904, and the LL.B. from Edinburgh, in 1905.

Dr. Halsted was one of the "old guard" at Johns Hopkins; a man of quiet, modest, unassuming personality; of great surgical ability, and with the intellect which marks the scientific surgeon.

Edward Anthony Spitzka, New York; College of Physicians and Surgeons in the City of New York, 1902; demonstrator of anatomy, 1904-1906, professor of general anatomy, 1906-1914, Jefferson Medical College, Philadelphia; member of the American Association of Anatomists, American Philosophy Society and fellow of the American Association for the Advancement of Science; editor of the eighteenth American Edition of Gray's "Anatomy"; Dr. Spitzka performed necropsy and examined the brain of Czolgosz, the assassin of President McKinley, and had attended many electrocutions, recording detailed observations on electric deaths and anatomic variations of criminals; served as lieutenant-colonel in the M. C., U. S. Army, during the World War; at the time of his death Dr. Spitzka was chief medical referee, rating section of the U. S. Veterans' Bureau; died September 4, aged 46, from cerebral hemorrhage.

Charles W. Lillie ⊕ East St. Louis, Ill.; Beaumont Hospital Medical College, St. Louis, 1888; city and state health officer; formerly professor of chemistry and toxicology at St. Louis College of Physicians and Surgeons, St. Louis; at one time president of the St. Clair County Medical Society; died, August 31, aged 74, at St. Mary's Hospital, following an appendectomy.

James Conger Dunn, Franklin Park, N. J.; University of Pennsylvania School of Medicine, Philadelphia, 1910; member of the Medical Society of New Jersey; aged 39; died, August 29, at St. Peter's General Hospital, New Brunswick, following an automobile accident, in which he suffered a fractured skull.

John Wesley Cunningham, Clinton, Iowa; State University of Iowa College of Medicine, Iowa City, 1897; member of the Iowa State Medical Society; aged 49; was drowned in the Mississippi River, at Camanche, August 30, when the boat in which he was crossing the stream sank.

James Merritt Corkran, Centerville, Md.; University of Maryland School of Medicine, Baltimore, 1887; president of the county school board; died, August 11, aged 62, at the University of Maryland Hospital, Baltimore, from carcinoma of the sigmoid flexure.

Charles Francis Bingaman, Pittsburgh; Hahnemann Medical College of Philadelphia, 1871; president of the medical board and on the staff of the Homeopathic Medical and Surgical Hospital and Dispensary of Pittsburgh; died, August 20, aged 74.

George A. Cameron ⊕ Philadelphia; University of Pennsylvania School of Medicine, Philadelphia, 1887; on the staff of the Germantown Dispensary and Hospital; died, August 24, aged 57, from heart disease, while on his vacation at Sharon, Conn.

Edward P. Weddell, Scottdale, Pa.; Medical Department of Western Reserve University, Cleveland, 1884; aged 66; was instantly killed, August 28, when the automobile in which he was driving was struck by a passenger train.

William T. Lindley ⊕ Hamilton, Mo.; Missouri Medical College, St. Louis, 1881; formerly president of the Grand River District Medical Society and the Caldwell County Medical Association; died, August 19, aged 66.

Elon N. Carpenter, New York; Medical Department of the University of the City of New York, 1884; member of the Medical Society of New York, and the New York Neurological Society; died, September 5, aged 63.

Samuel Jackson Steiner, Montgomery, Ala.; Vanderbilt University Medical Department, Nashville, Tenn., 1878; member of the Medical Association of Alabama; died, August 5, aged 65, from chronic interstitial nephritis.

William R. Roedel, Lebanon, Pa.; University of Pennsylvania School of Medicine, Philadelphia, 1895; member of the Medical Society of the State of Pennsylvania; died recently, aged 61, from cerebral hemorrhage.

Joseph William Kelley, Newark, N. J.; College of Physicians and Surgeons, Baltimore, 1897; served during the World War in the M. C., U. S. Army, with the rank of captain; died, August 20, aged 48.

Thomas J. Merryman, Long Beach, Calif.; Hahnemann Medical College and Hospital of Chicago, 1868; died, August 21, aged 77, at the Murphy Memorial Hospital, Whittier, from cerebral hemorrhage.

Augustus Milton Anderson, Atlanta, Ga.; Atlanta College of Physicians and Surgeons, Atlanta, Ga., 1895; member of the Medical Association of Georgia; died, August 9, aged 58, from angina pectoris.

Frederick Taylor Bond, Vallejo, Calif.; Medical Department, University of California, San Francisco, 1890; member of the Medical Society of the State of California; died, August 23, aged 57.

John Chiles Edwards, O'Fallon, Mo.; University of Virginia Department of Medicine, Charlottesville, Va., 1853; died, August 27, aged 90, at the home of his daughter in Highland Springs.

Patrick Henry Griffin, St. Louis; Missouri Medical College, St. Louis, 1880; member of the Missouri State Medical Association; died, August 25, aged 62, at St. John's Hospital, from carcinoma.

John Carson Moore, Jearoldstown, Tenn.; Lincoln Memorial University Medical Department, Knoxville, Tenn., 1912; died at the Greenville Hospital, Greenville, June 19, aged 35, from uremia.

Manasses G. Lynch, Como, Texas; Medical Department University of Louisville, Louisville, Ky., 1892; member of the State Medical Association of Texas; died, August 26, aged 55.

Calvin R. Lightner, St. Louis; Bellevue Hospital Medical College, New York, 1880; member of the Missouri State Medical Association; died recently, aged 70, at Rochester, Minn.

Jesse T. Holbrook, Bold Springs, Ga.; Atlanta Medical College, Atlanta, Ga., 1869; Civil War veteran, formerly a member of the state legislature; died, August 7, aged 77.

John Thomas Quinlan, New York; Jefferson Medical College, Philadelphia, 1919; on the staffs of Bellevue Hospital and St. Vincent's Hospital; died, August 25, aged 27.

⊕ Indicates "Fellow" of the American Medical Association.

John W. Meacham, Denver; Medical Department University of Louisville, Louisville, Ky., 1884; member of the Colorado State Medical Society; died, August 27, aged 64.

Charles Galloway, Mississippi City, Miss.; Medical Department of the Tulane University of Louisiana, New Orleans, 1889; died, August 10, aged 56, from angina pectoris.

Gotthilf Blech, Dubuque, Iowa; University of Erlangen, Germany, 1886; member of the Iowa State Medical Society; died, June 6, aged 70, from pulmonary tuberculosis.

Samuel F. Hance, Minneapolis; Albany Medical College, Albany, N. Y., 1854; Civil War veteran; died in July, at the home of his daughter in Fairport, N. Y., aged 97.

Enos Musser Hoover ✠ Elkhart, Ind.; College of Physicians and Surgeons, Chicago, 1906; died, August 25, aged 52, at Van Wert, Ohio, from cerebral hemorrhage.

Orville Clark Baker ✠ Brandon, Vt.; University of Vermont College of Medicine, Burlington, Vt., 1879; died, August 24, aged 71, from carcinoma of the stomach.

A. L. Parish, Tenaha, Texas; Memphis Hospital Medical College, Memphis, Tenn., 1892; aged 40; was found dead, June 30, with a bullet wound in his head.

Robert Hall Morrison, Mooresville, N. C.; Louisville Medical College, Louisville, Ky., 1881; died, August 7, aged 79, from chronic interstitial nephritis.

John A. W. Fernow, Chicago; College of Physicians and Surgeons, Chicago, 1901; died, September 2, aged 59, from generalized carcinoma of the abdomen.

George Henry Whaley, Crawford, Ohio; College of Physicians and Surgeons in the City of New York, 1870; died, June 25, aged 76, from endocarditis.

Robert P. Morehead, Weldon, N. C.; College of Physicians and Surgeons, Baltimore, 1895; died, August 15, aged 52, at Tucker Sanatorium, Richmond, Va.

Sarah H. Phillips, San Francisco; St. Louis Woman's Medical College, 1894; died, July 31, aged 66, at the Lane Hospital, from chronic nephritis.

John A. Knighten, Springfield, Mo.; Flint Medical College of New Orleans University, New Orleans, 1900; also a druggist; died, August 24, aged 70.

Russell Bertman Chachere, Opelousas, La.; Medical Department of Tulane University of Louisiana, New Orleans, 1904; died, August 26, aged 42.

William B. Rohmer, Bay St. Louis, Miss.; Tulane University of Louisiana School of Medicine, New Orleans, 1866; died, August 21, aged 80.

Wallace G. Randell ✠ Florence, Ariz.; National Medical University, Chicago, 1897; aged 45; was shot and killed, August 30, by a nurse.

Nelson Ward, Burlington, Wyo.; College of Physicians and Surgeons, Keokuk, Iowa, 1892; died recently, at Greybull, aged 86, from senility.

Henry Slater Wilcox, Little Falls, N. Y.; Rush Medical College, Chicago, 1919; died, August 23, aged 47, from retroperitoneal carcinoma.

William W. Power, Buford, Ga.; Georgia College of Eclectic Medicine and Surgery, 1882; died, August 22, aged 76, from carcinoma.

Francis Orlando Nash, Hollister, Calif.; Medical School of Maine, Portland, 1868; veteran of the Civil War; died, August 19, aged 80.

Frederick Clayton Burt, Hammonton, N. J.; University of Buffalo Department of Medicine, 1897; died, September 3, from pneumonia.

Albert S. Mackey, North Enid, Okla.; College of Physicians and Surgeons, Keokuk, Iowa, 1879; died, August 23, aged 77.

Julius G. Ehrhardt, St. Louis; St. Louis Medical College, St. Louis, 1869; also an oculist; died, September 3, aged 73.

Richard W. Hazelwood, Bengal, Ky.; School of Medicine, Louisville, Ky., 1860; died, August 1, aged 84, from senility.

Francis Marion Fitton ✠ Hamilton, Mo.; Miami Medical College, Cincinnati, 1887; died, August 31, aged 63.

Wilton H. Palmer, Los Angeles; Homeopathic Hospital College, Cleveland, 1879; died, August 24, aged 72.

Penuel Harrod, Avon, Ill.; Medical College of Ohio, Cincinnati, 1866; died, August 30, aged 77.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE JOURNAL'S BUREAU OF INVESTIGATION, OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER GENERAL MATERIAL OF AN INFORMATIVE NATURE

SOME ANALYSES FROM NEW HAMPSHIRE

There has recently been issued a "Food and Drug Inspection Number" of the *Bulletin of the New Hampshire State Board of Health.* It contains much information of interest and evidences intelligent activity on the part of the health authorities of that state. The following information regarding certain nostrums, both for internal and external use, will, doubtless, be of interest to many readers of THE JOURNAL:

POTION ANTILAITEUSE (N. A. Sirois, Kamouraska, P. Q., Canada).—The *Bulletin* states that a variety of medicinal claims was made for this preparation, most of which were fraudulent. Analysis showed the preparation to consist of a mixture of Epsom salt and powdered juniper berries.

CHIPWA INDIAN ROOT BLOOD PURIFIER (Lucy Royer of Manchester, N. H.).—This product was sold under the fraudulent claims common to such preparations. Analysis showed it to consist of Epsom salt with two or three simple herbs such as mandrake, spikenard and sarsaparilla.

BEST CATARRH REMEDY.—This also was a Lucy Royer product and was found to consist of a solution of tannic acid in glycerin.

NERVTONE TABLETS (A. F. Schambier, Manchester, N. H.).—These were recommended for various ailments. The label contained the claim, "no dangerous drugs," although the New Hampshire chemists found both arsenic and strychnin present. The *Bulletin* reports that the falsity of this labeling was responsible for the deaths of two children in Augusta, Maine.

ANGIOLYMPHE DU D'ROUS (L'Angiolymphe Laboratory, Dr. P. Roux, Angiers, France).—This was examined at the request of the superintendent of the State Sanatorium for Tuberculosis. The formula for this alleged remedy for tuberculosis was given as "glycoside d'iridee, 5 centigrams; distilled water, 2 c.c. in each ampoule." It was represented as being a "vegetable extract for intramuscular injection" and sold for sixteen dollars an ounce. The New Hampshire chemists reported that analysis showed it "to consist of a one and one-half per cent. solution in water of what is almost wholly sugar with a possibility of the presence (not definitely demonstrated) of a small amount of some glucoside." As the *Bulletin* states, even if the extractive matter consisted wholly of two grains of this principle from iris, as represented, it is obvious that it could be of no possible value in the treatment of tuberculosis.

NOONAN'S HAIR PETROLE (T. Noonan & Sons Co., Boston, Mass).—Was found to contain 17.02 per cent. of alcohol, salicylic acid and about 12 per cent. of refined mineral oil.

NEWBRO'S HERPICIDE (Herpicide Co., Detroit, Mich).—Was found to contain 28.39 per cent. alcohol, salicylic acid and borax.

A LA CORBEILLE FLEURIE EAU DE QUININE COMPOUND HAIR TONIC (Ed. Pinaud, Paris).—Found to contain 65.75 per cent. alcohol and a small amount of quinin.

PARKER'S HAIR BALSAM (Hiscox Chemical Works, Patchogue, N. Y.).—This preparation, sold "for restoring color to gray or faded hair," was found to consist of a strong solution of lead acetate with sulphur. The *Bulletin* states that no caution appeared on the label.

HAY'S HAIR HEALTH (Philo Hay Specialties Co., Newark, N. J.).—This also was a solution of lead acetate with sulphur.

DR. DURAND'S ACME HAIR REJUVENATOR (Parisian Hair & Corset Stores, Manchester, N. H.).—This, according to the *Bulletin,* was grossly misrepresented as: "Not a dye. Not injurious. Prevents hair from turning gray." It was found to be a solution of lead acetate with sulphur.

La Toilette Francaise (Elite Restorer Co., Worcester, Mass.).—This preparation, represented as "the only successful, safe and scientific hair color restorer," was found to contain 1.66 per cent. alcohol and to be an ammoniacal solution of silver nitrate.

Inecto-Rapid Gray Hair Remedy (Inecto, Inc., New York City).—This hair dye was one of the two-solution-preparations type, having hydrogen peroxid for one solution and paraphenylendiamin for the other. There is no excuse for the sale of paraphenylendiamin as a hair dye. The Journal has published records of many cases of poisoning due to the use of other hair dyes containing this particular chemical.

Gillespie Scalp Invigorator (Gillespie Mfg. Co., Boston, Mass.).—This preparation was sold for eczema, dandruff, etc., and found to contain 20.88 per cent. alcohol, together with glycerin, borax and red pepper.

Westphal's Auxiliator (Paul Westphal, New York City).—This preparation, "for the preservation, beauty and growth of the hair," was found to contain 45 per cent. alcohol, glycerin and borax.

Woodbury's Combination Hair Tonic (John H. Woodbury Inst., New York City).—Found to contain 26.49 per cent. alcohol with resorcin.

Mme. Fried's Henna (Mme. Fried, New York City).—Sold as a "vegetable" hair coloring and found to consist of "henna or a similar herb with considerable copper and iron salts."

Farr's Gray Hair Restorer No. 1 (Brookline Chemical Co., Boston, Mass.).—The labels for this product stressed the fact that it contains no lead or sulphur. It does, however, contain an ammoniacal solution of silver nitrate.

Wyeth's Sage and Sulphur Compound (Wyeth Chemical Co., Inc., New York City).—This was found to be a solution of lead acetate with sulphur.

Ess-Tee-Dee (Smith T. Dustin).—This was sold under the claim that it stops dandruff. It was found to be a solution of arsenic with borax.

Victor's Antiseptic Liquid Shampoo (T. Noonan & Sons Co., Boston, Mass.).—This was found to be essentially a solution of soap.

Danderine (Knowlton Danderine Co. Chicago).—This preparation was found to contain 8.77 per cent. alcohol, together with salicylic acid and borax.

Flora de Lille Complexion Preparation (Flora de Lille Co., Boston, Mass.).—This was described as "a liquid powder"; it was found to be a suspension of bismuth subcarbonate, and calcium carbonate, with borax.

Champlin's Liquid Pearl (Champlin Mfg. Co., New York City).—This product, which contained 2.35 per cent. alcohol, was a suspension of bismuth subcarbonate and calcium carbonate.

Cooper's Complexion Beautifier (Cooper & Co., Boston, Mass.).—This also was a suspension of bismuth subcarbonate and calcium carbonate.

Pompeian Hair Massage (Pompeian Mfg. Co., Cleveland, Ohio).—This was found to contain 15.03 per cent. of alcohol, with arsenic, borax, quinin and capsicum. Although the package was labeled "For external use only. Keep out of children's reach," the *Bulletin* questions whether, in view of the arsenic present, this cautionary labeling is adequate.

Philippine Antileprosy Society.—Prof. Shirley E. Roberts, vice president of the society, on his recent return to Manila from Culion, where he spent a month among the lepers of the island, stated that more than 3,900 lepers out of the 5,000 in the colony are receiving the ethyl-ester treatment and about 300 the Mercado treatment. About 700 are beyond medical aid and the other 300 not receiving treatment live at a distance from the main colony making treatment impracticable. Six months ago only about 300 of these people were receiving treatment. Professor Roberts states that Governor Wood is responsible for this further improvement.

Correspondence

SHALL THE BOY STUDY MEDICINE?

To the Editor:—Regarding the requirements for medical education, as it appears from the standpoint of a young man preparing to enter the study of medicine, a little personal experience I have had lately has much impressed me, and I think it worth while to tell the readers of The Journal of it.

Rev. A. B. is pastor of a flourishing congregation in a small village. He is an educated man, highly respected in his community, and he is married and has four children. His salary is $1,600 yearly. His eldest child, a son aged 19, has finished his freshman year in one of the small colleges of Pennsylvania, and has a strong desire to study medicine and thereafter do laboratory work. His father consulted the dean of one of our best medical schools, and was informed that the boy must finish his college course before he can enter the medical school; that the medical course requires four years, and that his expenses could hardly be kept below $900 a year with the most rigid economy.

This good pastor laid the whole matter before me for suggestions and advice. I pointed out to him that if the boy finished his college course and took the medical course and spent one year in a hospital, he would then be 27 years old before he could begin his life career, and that before he could earn enough to make him self-supporting he would probably be 30 years of age. I told him I thought the boy might make something to support himself while he was in college, but that medical studies were so exacting and so time-consuming that he ought not to count on earning any money during his course in the medical school.

Since the pastor and his wife are without means except his salary of $1,600, it was evident that he could not withdraw so much as $900 a year from his income to keep the boy in medical school. The thing could be accomplished only by borrowing, if he found some one willing to lend such an amount; and I pointed out to the pastor that such a loan would be more or less a source of worry and anxiety to himself, to his wife and the boy. All things considered, I told him that the boy ought to abandon the idea of studying medicine in justice to his father and his brothers and sisters.

I advised the pastor that since the boy had some love for laboratory work he might finish his second year at the small college which is near home and that he could then take his junior and senior years at Lehigh University following a technical course and thus finish at the age of 23, and doubtless obtain a position whereby he could begin to earn his living. The boy, being honest and intelligent and possessing fair ability, he could expect that he could be fully self-supporting by the age of 25.

I am wondering, Mr. Editor, whether I advised this father wisely. If I have not done so, I should like to hear from you as to some better plan for this boy.

Theodore Diller, M.D., Pittsburgh.

[Note.—The problem of how the poor boy is to obtain entry into the medical profession is as old as medical education itself. If a boy is anxious to secure a medical education and has the grit he can do so, just as many poor boys have done in the past and are doing today in our best medical schools. It is the boy, not the father, who is the determining factor in this matter. After he has once demonstrated his sincerity and his ability, he will receive encouragement from the faculty of the institution he has selected, and easy access to employment which will carry him along. As pointed out in the last Educational Number of The Journal, 534 scholarships were available this year for worthy students in forty-six medical schools, and thirty schools provided loan funds for deserving and needy students.—Ed.]

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

DOSAGE OF DIGITALIS

To the Editor:—All writers now agree that general practitioners as a rule prescribe digitalis in too small amounts; hence the lack of results in a great many cases. But they give no indication as to what the dosage, approximately, should be. Kindly give dose of the tincture in drops, not minims, and interval between doses, for an adult of medium weight, with moderately severe decompensation of heart, no digitalis preparation having previously been given. If you intended to depend on one massive initial dose, how much would you give?

H. S. GEIGER, M.D., Kissimmee, Fla.

ANSWER.—The modern tendency toward large dosage of digitalis may be illustrated by the Eggleston method of dose calculation which, among other places, has been described in THE JOURNAL (March 13, 1920, p. 733), to which it might be well to refer for details. To answer the question briefly, the patient's weight in pounds (minus edema) is multiplied by 0.15, which will give the number of cubic centimeters of standardized tincture in the total dose. If, for instance, the patient weighs 150 pounds, we have $0.15 \times 150 = 22.5$ cubic centimeters. It is hardly advisable to give this amount as a single dose. From one third to one half the amount (in this case from 7 to 11 c.c.) would be given as the first dose; after six hours, one fourth of the amount may be given, one eighth more six hours later, and so on, until saturation is evidenced by action "on the kidneys, the stomach, the pulse or the bowels," to use the words of Withering. It is obviously better to measure these doses accurately rather than to trust to measuring by "drops," which are of notoriously unequal size.

SULPHATES IN MINERAL WATER

To the Editor:—The analysis of water from a well at one of our mines shows that it is a sulphate water containing 119.74 grains per gallon of sulphates. The residue on evaporation is made up almost entirely of sulphates of lime and magnesia, with considerable sodium chlorid. Is a water containing so heavy a charge of lime and magnesia salts as 119 for each gallon unfit for drinking purposes? Would such a dose of salts prove harmful if taken daily? The average amount of water a miner takes into the mine for daily consumption is from 2 to 4 quarts.

MAX HERSCHLEDER, M.D., Mount Olive, Ill.

ANSWER.—The quantity of sulphates contained in this water is as great as or greater than in some of the mineral waters that make a pretention at therapeutic activity. A man who drinks 2 liters (2 quarts) of this water each day would ingest about 4 gm. (60 grains) of sulphate. This is the quantity contained in 100 c.c. of such definitely purgative mineral waters as the Hungarian "Apenta Water," which contains about 4 per cent. of sulphate. While the cathartic action of so dilute a mineral water may not be marked, one would still hesitate to pronounce the water entirely harmless for prolonged consumption. It would certainly be undesirable for those in whom it causes looseness of the bowel, as chronic purgation has a depleting effect on the system and a tendency to reduce weight, hemoglobin content, and blood pressure.

TRAUMATIC ARTHRITIS

To the Editor:—Is it possible for acute articular rheumatism to arise as a result of an injury, and would you attribute the rheumatism in the case mentioned below to the antecedent accident? A patient of mine was kicked on the knee with considerable violence by a horse. One week later he developed acute rheumatism. He never had this illness in his life before. The malady has incapacitated him for four months. Your opinion would be greatly appreciated.

WILLIAM J. MACDONALD, M.D., Boston.

ANSWER.—Acute articular rheumatism, as the term is now understood, is generally believed to be the result of an infection. Conceivably, on the hypothesis within which an injured joint would constitute a point of lowered resistance, the disease might develop primarily in a joint damaged as the result of an injury, when but for the injury it would not have developed at all. In the case described, in which the patient was kicked on the knee by a horse and one week later developed what is termed "acute rheumatism," unless joints other than the injured knee became involved, it would seem that the inflammatory process is best described as a simple traumatic arthritis.

GOAT'S MILK

To the Editor:—1. What is the average composition of goat's milk, and how does it differ from cow's milk? 2. What advantages or disadvantages has it over cow's milk? Please omit name.

S. J., Oklahoma.

ANSWER.—1. The difference in the composition of goat's milk and cow's milk is as follows:

	Sp. Gr.	Water	Casein	Albumin	Total Proteins	Fat	Sugar	Ash	Total Solids
Goat	1.0305	86.88	2.87	0.89	3.76	4.07	4.64	0.85	13.12
Cow	1.0313	87.27	2.88	0.51	3.39	3.68	4.94	0.72	12.73

2. Goat's milk, under certain circumstances, appears to be a valuable food for infants. Until the various supposed advantages of goat's milk have been proved by careful investigation, it is safe to say, however, that the main advantage is that a goat can be kept on a small plot of grass.

POISON FROM IVY ACCIDENT OR DISEASE?

To the Editor:—Is the reaction to contact with poison ivy classified as a disease (that is, a sickness) or an accident?

F. L. WATSON, M.D., McAlester, Okla.

ANSWER.—The *reaction* to contact with poison ivy is a dermatitis, which is a disease or sickness. The *contact* itself is virtually always an accident, as the word "accident" is commonly understood. Whether it is an accident within the meaning of an insurance policy or workmen's compensation act depends on the definition of the word "accident" as set forth in the particular policy or act under consideration.

CHROME ULCERS

To the Editor:—May I suggest to "Subscriber," who asks about chrome ulcers in THE JOURNAL, July 29, that he will probably be able to cut down their incidence greatly by having the workers use a prophylactic wash of 5 per cent. barium chlorid after exposure to chromic acid and its salts. That plan was adopted in a chrome plant where the men were subjected to chrome liquor, the bichromates and soda ash, purely on the basis of the chemical incompatibility of barium and chromic acid, and it proved very effective. Sodium thiosulphate (hyposulphite) is also recognized as an effective agent in treating chrome holes. For the purpose of softening and loosening the slough, a compress of a saturated solution of basic lead acetate for several days, I understand, is effective, though I have had no experience with it. I found that the problem of the chrome ulcer resolved itself into (1) prevention, and (2) after the ulcer appeared, getting rid of the slough and then patiently dressing the granulating wound until it healed.

O. T. SCHULZE, M.D., Napa, Calif.

Plague in Manchuria.—The first case of pneumonic plague reported in Manchuria occurred in Manchouli on Oct. 12, 1910. The last case was reported Dec. 25, 1910, two and one-half months after the outbreak. Owing to the energetic action of the Russian authorities only about 400 died. (Officially registered 392, p. 28.) In Harbin (or Fuchratein) the first cases were reported on Nov. 7, 1910. They were two tarbagan hunters, who had come from Manchouli. From both the Russian and Chinese records, small epidemics of pneumonic plague had occurred here before, but this time, within three months, over 5,000 persons in a population of 30,000 were killed by this disease. Harbin is closely packed and built on a low-lying swampy plain. It has narrow streets, and is inhabited principally by coolies. The majority of the houses are low, dark, dirty and overcrowded. On the other hand, Shuangchengfu, which is situated on the railroad line, 30 miles south of Harbin, is a finely planned city with wide streets and is famed for its large, well constructed houses. Yet, within seven weeks, there were 1,500 deaths in this city of 60,000 inhabitants.—*Report of International Plague Conference.*

Medical Education, Registration and Hospital Service

COMING EXAMINATIONS

ARIZONA: Phoenix, Oct. 3. Sec., Dr. Ancil Martin, 207 Goodrich Bldg., Phoenix.

CALIFORNIA: Sacramento, Oct. 16-19. Sec., Dr. Charles B. Pinkham, 906 Forum Bldg., Sacramento.

DISTRICT OF COLUMBIA: Washington, Oct. 10. Sec., Dr. Edgar P. Copeland, Stoneleigh Court, Washington.

FLORIDA: Tallahassee, Oct. 10-11. Sec., Dr. W. M. Rowlett, Tampa.

GEORGIA: Atlanta, Oct. 10-12. Sec., Dr. C. T. Nolan, Marietta.

HAWAII: Honolulu, Oct. 9-12. Sec., Dr. G. C. Milnor, 401 Beretania St., Honolulu.

IDAHO: Boise, Oct. 3. Director, Mr. Paul Davis, Boise.

ILLINOIS: Chicago, Oct. 10-12. Supt. of Registration, Mr. V. C. Michels, Springfield.

KANSAS: Topeka, Oct. 10. Sec., Dr. A. S. Ross, Sabetha.

MICHIGAN: Lansing, Oct. 10-12. Sec., Dr. Beverly D. Harison, 504 Washington Arcade, Detroit.

MINNESOTA: Minneapolis, Oct. 3-5. Sec., Dr. Thomas S. McDavitt, 539 Lowry Bldg., St. Paul.

MISSOURI: St. Louis, Sept. 25-28. Sec., Dr. Cortez F. Enloe, State House, Jefferson City.

MONTANA: Helena, Oct. 3. Sec., Dr. S. A. Cooney, Power Bldg., Helena.

NEW JERSEY: Trenton, Oct. 17-18. Sec., Dr. Alexander MacAlister, State House, Trenton.

NEW MEXICO: Santa Fe, Oct. 9-10. Sec., Dr. R. E. McBride, Las Cruces.

NEW YORK: Albany, Buffalo, New York and Syracuse, Sept. 25-28. Ass't, Professional Examinations, Mr. Herbert J. Hamilton, State Education, Albany.

OKLAHOMA: Oklahoma City, Oct. 10-11. Sec., Dr. J. M. Byrum, Shawnee.

PORTO RICO: San Juan, Oct. 3. Sec., Dr. M. Quevedo Baez, Box 804, San Juan.

WEST VIRGINIA: Huntington, Oct. 10. State Health Commissioner, Dr. W. T. Henshaw, Charleston.

WYOMING: Cheyenne, Oct. 9-11. Sec., Dr. J. D. Shingle, Cheyenne.

Georgia May-June Examinations

Dr. C. T. Nolan, secretary, Georgia State Board of Medical Examiners, reports the written examinations held at Augusta, May 31-June 2, 1922, and at Atlanta, June 7-9. Fifty candidates were licensed at Atlanta and thirteen candidates were licensed at Augusta, by examination, all candidates passing. The following colleges were represented:

AUGUSTA EXAMINATION

College	PASSED	Year Grad.	Per Cent.
University of Georgia	(1922) 88.5, 88.7, 89.5, 91.1, 91.8, 92, 92.1, 92.2, 92.5, 93.3, 93.4, 94.9, 98.3		

ATLANTA EXAMINATION

College	PASSED	Year Grad.	Per Cent.
Emory University	(1922) 81.3, 85.9, 86.3, 86.4, 87.2, 88.3, 88.5, 88.9, 89, 89.2, 89.3, 89.3, 89.5, 89.6, 89.8, 89.9, 89.9, 90.1, 90.3, 90.3, 90.3, 90.4, 90.4, 90.5, 90.5, 90.7, 91.1, 91.3, 91.5, 91.8, 91.8, 91.9, 91.9, 92, 92.4, 92.6, 92.9, 93.1, 93.3, 93.4, 93.5, 93.6, 93.8	88.3, 88.3,	88.3,
Harvard University		(1921)	87.8
Cornell University		(1919)	93
Jefferson Medical College		(1922)	89.5, 93.8
Meharry Medical College		(1922)	90.8

Dr. Nolan also reports that from October, 1921, to July, 1922, twelve candidates were licensed by reciprocity. The following colleges were represented:

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Medical College of Alabama		(1892)	Alabama
Baltimore Medical College		(1901)	New Jersey
Johns Hopkins University		(1919), (1920)	Maryland
University of Maryland		(1919)	Maryland
Harvard University		(1906)	Mass.
University of Michigan Medical School		(1917)	Michigan
Missouri Medical College		(1887)	Virginia
Medical College of Ohio		(1904)	New Jersey
Jefferson Medical College		(1919)	N. Carolina
University of Pennsylvania		(1919)	Tennessee
Medical College of Virginia		(1920)	Virginia

Rhode Island January Examination

Dr. Byron U. Richards, secretary, Rhode Island State Board of Health, reports the written and practical examination held at Providence, Jan. 5-6, 1922. The examination covered 7 subjects and included 70 questions. An average of 80 per cent. was required to pass. Twelve candidates were examined, all of whom passed. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Boston University		(1921)	85.5
Harvard University		(1918) 88.5, (1920)	91.1
Tufts College Medical School		(1919) 89.4, (1920) 80.6, 87, (1921) 86.5	
Long Island College Hospital		(1915)	89.1
University and Bellevue Hospital Medical College		(1920)	89.1
Jefferson Medical College		(1920)	85.1
University of Naples		(1900)*	86.7
University of Geneva		(1915)*	80.7

* Graduation not verified.

Arizona July Examination

Dr. Ancil Martin, secretary, Arizona State Board of Medical Examiners, reports that 7 candidates were licensed by reciprocity, July 6-7, 1922. The following colleges were represented:

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Georgetown University		(1915)	Dist. Colum.
Illinois Medical College		(1910)	Washington
Rush Medical College		(1899)	Iowa
University of Pennsylvania		(1898)	Penna.
Medical College of the State of South Carolina		(1916)	S. Carolina
Meharry Medical College		(1915)	Texas
Marquette University		(1918)	Wisconsin

Vermont July Examination

Dr. W. Scott Nay, secretary, Vermont State Board of Medical Registration, reports the written examination held at Burlington, June 21-23, 1922. The examination covered 12 subjects and included 90 questions. An average of 75 per cent. was required to pass. Fifteen candidates were examined, all of whom passed. Two candidates were licensed by reciprocity. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Baltimore Medical College		(1907)	87.2
University of Vermont	(1911) 80, (1921) 89.2, (1922) 86.1, 86.5, 87, 87.5, 88.1, 88.4, 89.6, 89.8, 89.8, 90, 91.5, 91.6		

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Columbia University		(1908)	Maine
University of Virginia		(1919)	Virginia

Miscellany

SPIRIT PHOTOGRAPHS

"There is a society or club known as the Magic Circle which consists of professional conjurers, but admits a few approved amateurs, to the kindness of one of whom, a distinguished member of the medical profession, we are indebted for a copy of a report, dated May 31, issued by the Occult Committee of the Circle. This committee, which consists of expert conjurers, has been appointed to investigate what are called 'spiritualistic phenomena,' and at the suggestion of Sir Arthur Conan Doyle appears to have turned its attention first to spirit photographs. The report deals with the inquiries made by the committee into the claims of two people —a man and a woman—who it was alleged were producing spirit photographs of a remarkable nature in unopened packets of photographic plates. Neither of the mediums came out of the ordeal unscathed. When a fraud-proof packet was sent to the male operator he obtained no results. He stated that the packet had twice been 'held,' but that the 'usual sensation' had not been felt. As soon, however, as a packet that could be tampered with was submitted, a 'psychic extra,' as it appears to be called, was obtained on one of the plates. Unfortunately for the performer, the conjurers had tampered with the packet first. In addition to other tests, a straight line of red varnish (invisible in the red light of the dark room) had been painted across the top left side of the edge of the stack of six plates. On the return of the packet by the medium three of the red marks were found at the bottom, showing that these plates had been reversed. When the operator was asked for an assurance that the packet had really been returned unopened, he replied in the affirmative.

He said that it was quite usual to get adverse remarks from persons who did not understand, and that such remarks were not worthy of notice. Shall we admire the power of spirits, or deplore the frailty of human nature? The lady medium was vouched for by Mr. and Mrs. Hewat McKenzie, who conduct an institution known as the British College of Psychic Science. Three sittings were held with this medium. First, two members of the committee secured a private sitting. It was required that the plates, enclosed in a sealed packet, should be sent for 'magnetization' some days in advance, and at the sitting these plates were exposed, and on development 'extras' were on most of them. On one a face was visible in the midst of a cotton-wool effect; the other had crude markings, ascribed by the medium to unformed 'ectoplasm' or to 'spirit lights.' As will be observed, she had acquired some of the latest spiritualistic terminology. At the second sitting, arranged by Mrs. McKenzie, a sealed box of six plates, forwarded in accordance with instructions, was produced by the medium. The box was opened and the plates were transferred to metal dark slides; a service was then held, hymns being sung, and the Lord's Prayer recited. The plates were then exposed, and an 'extra' appeared on one of them—on No. 1 plate—which the investigators satisfied themselves had been substituted for the first plate of the original package. The medium had by this time become suspicious and nervous, and in fact she was not equal to holding her own with professional conjurers. She, however, consented to a third sitting, and for this an unopened box of unprepared plates was sent. It therefore became necessary that the plates should be secretly marked before being placed in the dark slides. One of the investigators, having placed the open stack of plates before the medium under the ruby light, secretly attached a small pad of pink material, chemically prepared, to the ball of his right thumb, and in handing the plates one by one to the medium an invisible mark was impressed on each. The medium gathered up the slides, and going into the studio took them to a small table on which her handbag was standing. The ostensible object was to obtain the hymn-books for the service; but the move being anticipated, the members of the deputation placed themselves in convenient position to observe her actions. The hand holding the slides was seen to be placed inside the bag; one slide was dropped into a side pocket and a duplicate slide picked up with the hymn-books. Four plates were developed, and on one which did not show the mark a 'spirit extra' appeared. All this may be amusing to the cynic, but the conclusions the committee of the Magic Circle draw are that although spirit photographers, like conjurers, meet changing conditions by the adoption of new methods, there are at present at least two methods in general use by some, at least, of the mediums who devote themselves to obtaining photographic 'extras.' In the one case, when the plates are accessible before the sitting, the spirit form is impressed, in advance, by contact with a selected transparency. In the other, when the packet is not available beforehand, the exchange for a prepared plate is made by a subtle move after the original plates have been loaded into the dark slides. The committee assert that they have never imposed a test which would not have served to demonstrate the straightforwardness and honesty of the medium, and conclude with a promise to extend to any honest medium fair, impartial and courteous treatment, and to give him a free hand to carry out the experiment in his own way."—*British Medical Journal.*

SYPHILIS IN URUGUAY

Of 14,072 patients examined from August, 1900, to Sept. 30, 1917, in the Skin and Syphilis Clinic of Montevideo, in charge of Dr. José May, who analyzes the records in his book "La Sífilis en el Uruguay," 2,771 had syphilis, and 2,182 of the 2,771 were in the secondary stage. Syphilis affected 11.83 per cent. of the patients in the year 1900, reaching its maximum, 30.30, in 1903, from which year it showed a progressive reduction until 1911, when it showed again an increase following the introduction of arsphenamin. The 1917 percentage was 17.52. From 1918 to 1921, out of a total of 10,000 patients, about 10 per cent. were syphilitic. As this clinic is only one of the six free dispensaries in Montevideo, the prevalence of syphilis is shown to be unusually high. This is in spite of the fact that reglementation is in force. Extragenital chancres were very rare. Of 1,933 cases, there were chancres on the lips in fourteen, on the tonsils in eight, on the canthus in two, and on the forefinger in one. From 1918 to 1921, 7,000 Wassermann tests were made for the clinic at the Central Laboratory of the Prophylactic Institute Against Syphilis, being positive in 100 per cent. in secondary syphilis, in 95 per cent. in tertiary syphilis, and in from 20 to 40 per cent. in nerve, cardiovascular and ocular syphilis; in cases of enlarged epitrochlear glands, 5.80 per cent. were positive in men and 25 per cent. in women. Among persons without a history of syphilis, 7.70 per cent. in male patients and 19.20 per cent. among female patients gave a positive test. In a large proportion, 10 per cent. in men and 40 per cent. among women, having only some diffuse or local pain, the Wassermann test proved positive. In other affections than syphilis, the Wassermann test proved positive in 5 per cent. of cases as follows: vitiligo, 9 cases, two positive tests; psoriasis, 24 cases, one positive test (suspected history of syphilis); eczema, 49 cases, two positive tests, local chancre; varicose ulcer, 34 cases, eleven positive tests (two suspected syphilis); leprosy, 8 cases, one positive (suspected syphilis); tuberculid, 1 case, positive; Recklinghausen's disease, 3 cases, one positive; acne, 30 cases, two positive (one suspected syphilis). In primary syphilis the blood Wassermann test becomes positive in from twenty to forty-five days from the date of the infection. Two undoubted cases of reinfection were observed. According to the author, syphilitics having a minimum of two lymphocytes per cubic millimeter in the cerebrospinal fluid must be treated and another lumbar puncture practiced. The observations in two groups of six patients each with tabes showed that treatment in some cases brings about the subsidence of serologic signs. This, however, does not imply the disappearance of tabetic symptoms. As regards phagedenic chancres, May thinks that autovaccines yield some promise. In a separate chapter, A. Prunell comments on the value of the Wassermann test with the exudate from the initial lesion in the early diagnosis of syphilis, it being more intense than in blood serum, and being obtainable two or three weeks earlier.

GAS MASK FOR ENGINE CREWS

The development of a pocket canister to alleviate the discomfort of engine crews when passing through railroad tunnels is announced by the U. S. Bureau of Mines. Details of the experiments are given in Technical Paper 292 by Fieldner, Katz and Kinney, which may be obtained from the Bureau of Mines, Washington, D. C. The canisters, which fit conveniently into a coat pocket, are filled with an absorbent mixture of activated charcoal and soda-lime, and contain filters of Turkish toweling. They may be cheaply made and are a great improvement over the sponge respirators, handkerchiefs, and towels now used by engineers and firemen when passing through unventilated tunnels.

The extreme discomfort caused by breathing sulphurous locomotive smoke is familiar to any one who has ever been a passenger in a coach near the locomotive when passing through a tunnel. Bad as these conditions are for the coach passengers, they are almost intolerable in the engine cab, where hot smoke and exhaust steam envelop the cab and fill it with hot gases. The temperatures in locomotive cabs while passing through tunnels have been found to range up to 162 F. Aside from the question of extreme discomfort, locomotive smoke contains poisonous and asphyxiating constituents which have occasionally been fatal to members of the crews of engines stalled in poorly ventilated tunnels. The tunnel crown directs the smoke from the smoke-stack upon and around the locomotive. Mixed with air and exhaust steam, it enters the cab, surrounding the engineer and fireman. Discomfort produced by the sulphurous smoke is intensified by the heat and humidity from the flue gases and exhaust steam. Slow, heavy freights going up grade through long, unventilated tunnels cause the most discomfort, especially when two or more locomotives are used. When such

trains are stalled the crews are in danger of their lives. Carbon monoxid, augmented by the high temperature, is the probable cause of danger.

Respirators of the "pig-snout" type containing wet sponges afford some relief by cooling the gases and absorbing some of the irritating constituents of smoke, but protection is not complete, and most men will not bother with such respirators, preferring to tie handkerchiefs over the nose and mouth.

The experiments of the Bureau of Mines were conducted in twenty-three tunnels of the Baltimore and Ohio Railroad between Grafton and Parkersburg, W. Va.; in the Gallitzin tunnels of the Pennsylvania Railroad near Altoona, Pa., and in the Schenley tunnel in Pittsburgh. The Bureau of Mines has investigated the army type of mask also to determine whether that type could be modified to be of service about smelters, blast furnaces and possibly mines. This investigation showed that while the army mask afforded protection against all the gases met in warfare, it does not afford protection against all gases met in industrial life. More especially, it does not protect against carbon monoxid, or against such common industrial gases as illuminating gas, natural gas, ammonia, and the products of combustion found in burning buildings. For this reason, the bureau has sought to impress the public with the limitations of the army gas mask, and at the same time to develop special types of masks suitable for different industries or occupations, that will serve to protect the wearer from the gas hazards encountered in his particular field of work. The bureau has done work also on a "universal" mask that will serve to protect the wearer against all of the poisonous gases commonly met. A light weight form universal mask has been developed for the use of city firemen.

The charcoal and soda-lime canister protects against certain acid gases and organic vapors. It should not be used in gasoline vapor. It affords no protection against ammonia, carbon monoxid, producer gas, coal gas, water gas and blast-furnace gas. The pocket canisters afford protection against the coarse smoke particles of locomotive smoke, but give very little protection against wood smoke, very fine dust, or such fumes as those of tin tetrachlorid, silicon tetrachlorid or sulphur trioxid.

Book Notices

VACCINS ET SÉRUMS. Par le Dr. Apert, Médecin de l'Hôpital des "Enfantes malades." Paper. Price, 7 francs, 50 centimes. Pp. 282. Paris: Ernest Flammarion.

Dr. Apert is attending physician to the Hôpital des Enfants malades. He has published several other works on pediatrics and pathology. This book is written for the practicing physician rather than for the immunologist, and is especially valuable to the pediatrician. In discussing immunity, the terminology of Bordet and the French school is used. The first chapters contain much of historical interest, and the following chapters give a concise account of the diseases in which vaccines and serums are used in prevention or cure. The value of the work is enhanced by the incorporation into it of the results obtained in the Hôpital des Enfants malades and in the armies of the Great War. In addition to the description of the uses of vaccines and serums, the chapter on intestinal infections contains an account of the recent work on bacteriophages.

THE ETIOLOGY AND PATHOLOGY OF TYPHUS. The Main Report of the Typhus Research Commission of the League of Red Cross Societies to Poland. By S. Burt Wolbach, John L. Todd, and Francis W. Palfrey. Cloth. Pp. 222, with 102 illustrations. Cambridge: Harvard University Press, 1922.

This is an important contribution to the study of typhus fever. Lice, reared from uninfected stock and free from rickettsia-like organisms and disease virus of all kinds, when allowed to feed on typhus patients became infective and acquired *Rickettsia prowazeki*, which the authors regard as the cause of typhus. The experiments yielding these results appear flawless. To mention just one detail: To insure that the lice used would be free from all such organisms, nits were obtained from a dispensary in Montreal and hatched out on members of the expedition. The causal rôle of the rickettsia bodies is indicated further by their presence in the lesions of human and guinea-pig typhus, but the attempts to cultivate these bodies all failed. The illustrations are excellent. The book is printed on heavy calendered paper; the size is large octavo, 7½ by 10½ in., but the printed page covers only 4½ by 7 inches—a waste of good paper. The report is dedicated to investigators of typhus who died from typhus: Conneff, Cornet, Jochmann, Lüthje, von Prowazek, Ricketts and Schüssler. Since this list was written, Weil of Prague has joined this noble band of victims to typhus contracted while studying the disease.

PSYCHIATRIE DU MÉDECIN PRATICIEN. Par M. Dide & P. Guiraud, Médecins de L'Asile D'Aliénés de Braqueville. Paper. Price, 20 francs net. Pp. 416, with 8 illustrations. Paris: Masson et Cie, 1922.

The various mental disorders are described, under more or less conventional titles, in simple language which is often little more than a series of definitions of technical terms in common use. The chief point of distinction from most other works of the kind lies in the classification, which is based on the anatomopathologic views of the authors. The various named disorders are conceived as clinical syndromes due to the location of the lesion, rather than as disease entities, even though the location is often extremely vague and hypothetic. Such an effort seems hardly wise, though it is in keeping with modern trends. The influence and significance of "the unconscious" in determining disturbances in feeling, thought and action are briefly, but simply and intelligibly, outlined in the first chapter, and it is unfortunate that more use is not made of these dynamic factors in the later portions of the book. Especially is this true when it is remembered that the book is intended for the general practitioner, on whom will rest the responsibility for early diagnosis and treatment at a time when prevention of more serious disorder is possible. The outline for the examination of patients is well chosen and not too detailed. Medicolegal notes and the chapter on commitment under French law are of practical value. Treatment is dealt with briefly and summarily in connection with each type of "syndrome," but, owing to the strong emphasis placed on constitutional and hereditary factors, leaves with the reader a decidedly pessimistic impression.

OBSTETRICAL NURSING. A Text-Book on the Nursing Care of the Expectant Mother, The Woman in Labor, The Young Mother and Her Baby. By Carolyn Conant Van Blarcom, R. N. Cloth. Price, $3. Pp. 558, with 208 illustrations. New York: The Macmillan Company, 1922.

Miss Van Blarcom has prepared one of the most valuable contributions on obstetric nursing that have been published in late years. In many ways it reflects the influence of the chief under whom she served at Johns Hopkins. The lucid diction, the human touch manifested in many places, and the completeness of exposition of the subject make the book not only for the nurse, as avowedly intended, but also for the physician and all those who are associated with him in the care of the mother during the expectant period, and later when her hopes have been realized. The merits of the introduction, the chapters on prenatal care and on the mental hygiene of the expectant mother, and those chapters devoted to the care of the mother and her child in sickness and in health stand out preeminently as the fruits of a wide experience, a clarity of vision, and a saneness of purpose which are refreshing. The illustrations adequately supplement the text, and add much to the worth of the volume.

THE WRITING OF MEDICAL PAPERS. By Maud H. Mellish. Cloth. Price, $1.50 net. Pp. 157. Philadelphia: W. B. Saunders Co., 1921.

In this booklet, Mrs. Mellish has collected numerous excellently chosen quotations from various authorities on writing, and has supplemented the text by some condensations and summaries. The result is a reference work which should give many excellent hints to the medical writer. If there is any criticism to be made, it is that the author advises certain methods which she has adopted but which have thus far not met with general acceptance.

Medicolegal

Liability as Partners—Administration of Anesthetic by Nurse—Evidence

(Cook v. Coleman et al (W. Va.), 111 S. E. R. 750)

The Supreme Court of Appeals of West Virginia, in reversing a judgment for $10,000 damages rendered against three physicians and remanding the case for a new trial, says that they were sued as partners doing business under the name of a hospital. The plaintiff entered the hospital and was operated on for a laceration of the neck of the uterus due to childbirth three or four years previously. The operation also included an attempt to remedy a laceration of the perineum suffered at the same time. To negligence or unskilfulness in the operation the plaintiff attributed a fistula that shortly thereafter made an opening between the vagina and the rectum. Moreover, the plaintiff contended that an operation in the region of the fistula was neither necessary nor authorized, while the defendants contended that it was both authorized and necessary, and that the fistula was the result of unavoidable infection. After an unsuccessful effort to remedy the fistula, the plaintiff was taken to another hospital, at which, after the infection was eliminated and the tissues were strengthened, the trouble was remedied in the third or fourth operation performed there. The court is unable to say that the jury could not properly have returned a different verdict on the question of liability.

The court holds that, in what is termed an action of trespass on the case, for recovery of damages for breach or violation of a duty arising out of a contract alleged to have been made between the plaintiff and the defendants, the latter being sued as partners, the defendants, though not actual partners, may be held to liability as if they were, on proof of their having held themselves out, or knowingly permitted themselves to be held out, as such, and knowledge of and reliance on the representation, by the plaintiff, in the making of the contract. Evidence of separate admissions of the partnership relation, of close association in business, of general reputation of the existence of the partnership known to and relied on by the plaintiff, and billheads used in the business, such as those of a hospital designating one of the defendants as "surgeon in charge," another as "resident surgeon," and the third as "associate," is admissible to prove liability as partners.

The anesthetic was administered by a nurse, and the plaintiff contended that imperfect administration of the anesthetic had contributed to or caused the injury which she alleged had been inflicted on her in the performance of the operation. Being blindfolded when the ether was administered, she could not say whether the physicians were then present or not, but she thought they were not. They said they were, and that the ether was properly given under the supervision of one of them. She claimed that she was sufficiently conscious at one time to know that she felt pain and flinched or flounced, while on the operating table. In connection with this evidence, an expert witness was permitted to say over objection that, in his opinion, administration of ether by a doctor of medicine is legally required. As neither the common law nor any statute of West Virginia requires such administration, the ruling was clearly erroneous. In respect of the evidence of another expert witness, as to the propriety of administration of ether by a nurse, undue limitation of cross-examination was complained of. The nurse was shown to have had considerable experience in such administration and to be competent in the opinion of her employer. A question substantially reciting her experience and the quality of her work in that line and asking the opinion of the witness, based thereon, was excluded. He might have adhered to his opinion, but he might have qualified it or admitted that it was not in accord with uniform practice. Manifestly, he should have been required to answer the question. His evidence on that point, taken in connection with the testimony of the plaintiff, was strongly probative in her favor, and the defendants should have been allowed to test the soundness of his opinion thoroughly.

A female plaintiff in an action for damages for an injury alleged to have been negligently done in a surgical operation, working malformation of some of her organs and general debility, is not competent to testify that, by reason thereof, she is incapable of childbearing. Nor can she testify to an opinion expressed by her physician, to the effect that she is so incapacitated. But her testimony to her loss of sexual inclination, in consequence of the injury, is admissible. The professional opinion testified to by her would be mere hearsay, while the physical incapacity to carry and deliver a child is a question of medical and surgical science, as to which she is obviously incompetent to express an opinion.

Absence of Attending Physician in Emergency—Expert Testimony

(Browning v. Hoffman et al. (W. Va.), 111 S. E. R. 492)

The Supreme Court of Appeals of West Virginia, in reversing a judgment for $5,000 damages that was rendered in favor of the plaintiff on the second trial of this case, which is remanded for a new trial, says that the action was one for alleged malpractice by physicians and surgeons who operated a private hospital in which the plaintiff, a boy, was treated for a compound comminuted fracture of one leg. Within forty-eight hours after the wound was properly dressed and the broken bones set, gangrene developed, rendering amputation necessary, while the attending physician was temporarily absent, though the patient was attended by competent nurses, and there was a competent assistant physician whom the nurses were instructed to call, if necessary. Evidence to the effect that the leg was gangrenous to the knee and discolored for a space of 2 or 3 inches above the knee at 2 or 3 o'clock p. m. of the second day, and that, in the opinion of a physician who saw it then, it could not have been in good condition at 10:30 a. m. of that day, taken in connection with proof that, in the morning, there was evidence of a lack of circulation but no constriction nor gangrene and that efforts by approved methods on the part of the nurses and the assistant physician to restore or increase circulation had been constantly made throughout the forenoon and development of the trouble carefully watched until 2:30 p. m. did not appreciably tend to prove negligence on the part of the attending physician, in temporarily leaving the patient, or providing for his care in emergencies in his absence, nor on the part of the nurses and assistant physician, in respect to care and treatment of the patient.

To say that a surgeon, even in a critical case, after skilfully treating a wound and doing all that seemed to be necessary for the time being, may not temporarily substitute a competent associate or assistant, for purposes of overseeing the case, and provision against possible emergencies, would amount to prescription of a harsh and unreasonable rule. Ordinarily, a physician is unable to devote his entire time to a single patient, or to stay within instant call. On him as well as other citizens, public duties are imposed, and the necessity of his professional services to others renders it impossible at all times to keep in immediate touch with a single patient. Of course, he cannot abandon his patient nor neglect necessary attention and treatment. But, if he temporarily provides competent attention and treatment under his personal direction, though not in his presence, there is neither abandonment nor neglect. While the implied covenant in this case was personal and unassignable, such delegation as took place did not amount to an assignment. It was a means or method of performance, such as may reasonably be deemed to have been within the contemplation of the parties, and, therefore, within the contract of employment.

Nor, assuming that the operating physician, before leaving late in the evening of the first day, visited the patient or should have done so and, if he did, saw or should have seen the chart disclosing a slight rise in temperature, pulse and respiration, could the court properly instruct the jury, on that fact and the nature of the wound, that he was negligent in temporarily absenting himself on a business mission, because such facts, taken in connection with the later developments, constituted no appreciable evidence of such negli-

gence. A physician is not liable for mere errors of judgment. Although, in many instances, the evidence of expert witnesses is entitled to much greater weight than that of non-experts, the jury are presumptively as thoroughly cognizant of the fact as the court, it being one of common knowledge; wherefore, there is no impropriety in the giving of an instruction, in a case in which the issue is largely dependent on expert testimony, advising the jury to consider it and all of the other evidence and give it such weight as they think it is entitled to; and, further, that its value depends on the circumstances of each case, to be ascertained by the jury. Variance of the testimony of an expert witness in a second trial from his evidence in the first and from that of other experts does not render it inadmissible. Its weight is for the jury.

Liability for Second Accident Aggravating Injury

(Wagner v. Mittendorf (N. Y.), 134 N. E. R. 539)

The Court of Appeals of New York says that plaintiff Wagner, 18 years of age, had his right leg broken in a collision with a touring car owned by the defendant. Two actions were brought, one by Wagner to recover for his personal injuries, and the other by his mother to recover for her loss of his services, which resulted in judgments for the plaintiffs, in moderate sums, which are affirmed. The court allowed an appeal to it on exceptions taken to the admission of evidence bearing on the injury and damages, deeming that the evidence presented a question of sufficient importance to review, as it had not theretofore been directly passed on by this court.

After the accident, the plaintiff was taken to a hospital, where his leg was set in a plaster cast. When he was able to get around on crutches, he was taken to his home, where, about two weeks later, a physician removed the cast. The physician testified that he found the leg in good condition, except that the upper part, the tibia, projected just a trifle beyond the lower part. There seemed to be good union, but the leg was not absolutely straight. He advised Wagner to walk around and take a little exercise to strengthen the muscles of the leg. Then, one day, when Wagner was stepping over a doorsill, one of his crutches slipped, and he fell halfway, and hit his leg against a desk, refracturing the leg at exactly the point where it had been broken before. The jury were instructed:

> Now on the question of damages, the question arises as to what effect the second injury that he received had on the damages. The law is this: If a person is injured, as the plaintiff was, and proceeds in accordance with the doctor's instructions and in a reasonably careful manner in getting about, and another accident happens to him which results in aggravating his injury, without negligence on his part, then the injury may be added to the original injury, and the damages may be compensation for all of the injury. If, on the other hand, the second injury was the result of the negligence of the plaintiff, disobedience of the instructions of his physician, for example, lack of care in going about; if the second injury results from lack of care, then the defendant may not be charged with the added injury so received. The defendant in any event is only liable for the injuries naturally resulting from the accident.

The testimony regarding the second fracture of the leg and the consequences resulting therefrom was competent and properly admitted by the trial judge. The charge of the court correctly stated the rule of law applicable to these circumstances.

Suit Board of Medical Examiners Could Not Maintain

(Bentley v. State Board of Medical Examiners et al. (Ga.), 111 S. E. R. 379)

The Supreme Court of Georgia says that the petition in this case was filed by the board in order to enjoin the defendant from illegally practicing medicine in the state; to cancel his medical diploma, on the ground that it was fraudulently obtained or was a forgery, and to have expunged from the records of the superior court in which it was recorded the license under which he claimed the right to practice medicine. The question was: Had this board, as such, the power to file this suit for these purposes? The supreme court holds that it did not have the power, and that the trial court erred in not sustaining a general demurrer to the petition.

This board, the supreme court says, is an administrative body, and has only such powers as the legislature has expressly or by necessary implication conferred on it. This is the rule which is well established as to other administrative bodies, and this rule applies on principle and reason to the board of medical examiners. Such a body has such implied powers only as are reasonably necessary to execute the express powers conferred. The act of the legislature creating this board, as amended in 1918, does not expressly confer the power to file such a suit, and such power is not reasonably necessary to execute the express powers conferred on the board by these acts; and for this reason cannot be implied. Even if the language found in the caption of this act, "to protect the people from illegal and unqualified practitioners of medicine and surgery," were contained in its body, the proper construction thereof would not confer the power claimed by the board in this case, as the methods of protecting the people in the state from illegal and unqualified practitioners of medicine and surgery are fully outlined and defined in these acts; and, when such means and methods are prescribed for protection, they must be followed by this board. The board cannot resort to any other methods of protecting the people of the state. Certainly no other power of protection will be inferred from the acts creating this board.

This court has held that a court of equity, at the instance of the state, cannot enjoin a person from illegally practicing medicine in the state. If the state cannot in equity protect the people of the state by enjoining one from illegally practicing medicine, then, of course, this board cannot maintain a petition for such injunction. Injunction would afford swift, full and complete protection to the people of the state against illegal and unlawful practitioners of medicine. If equity cannot grant such relief, it cannot grant the other relief of cancellation of the defendant's diploma and the expurgation of the record of his license, which would have the effect, indirectly, of the grant of an injunction. So the supreme court thinks that this board was without power, express or implied, to file the petition in this case.

Society Proceedings

COMING MEETINGS

American Academy of Ophthalmology and Oto-Laryngology, Minneapolis, Sept. 19-23. Dr. Luther C. Peter, 1529 Spruce St., Philadelphia, Sec'y.

American Association of Obstetricians, Gynecologists and Abdominal Surgeons, Albany, N. Y., Sept. 19-21. Dr. James E. Davis, 111 Josephine Ave., Detroit, Secretary.

American Association of Railway Surgeons, Chicago, Oct. 18-20. Dr. Louis J. Mitchell, 29 E. Madison St., Chicago, Secretary.

American Child Hygiene Association, Washington, D. C., Oct. 12-14. Miss G. B. Knipp, 111 Cathedral St., Baltimore, Md., Secretary.

American Electro-Therapeutic Association, New York, Sept. 19-22. Dr. Richard Kovacs, 223 E. 68th St., New York, Registrar.

American Public Health Association, Cleveland, Ohio, Oct. 16-19. Mr. A. W. Hedrich, 370 Seventh Ave., New York, Secretary.

Association of Military Surgeons of the United States, Washington, D. C., Oct. 12-14. Col. James Robb Church, M. C., U. S. Army, Medical Museum and Library, Washington, D. C., Secretary.

Central States Pediatric Society, Cincinnati, Oct. 16-17. Dr. H. T. Price, Westinghouse Building, Pittsburgh, Secretary.

Colorado State Medical Society, Colorado Springs, Oct. 3-5. Dr. F. B. Stephenson, Metropolitan Bldg., Denver, Secretary.

Delaware State Medical Society, Dover, Oct. 9-10. Dr. W. O. La Motte, Industrial Trust Building, Wilmington, Secretary.

Indiana State Medical Association, Muncie, Sept. 27-29. Dr. Charles N. Combs, Terre Haute, Secretary.

Kentucky State Medical Association, Paducah, Oct. 16-19. Dr. J. A. McCormack, 532 W. Main St., Louisville, Secretary.

Medical Association of the Southwest, Hot Springs, Ark., Oct. 4-6. Dr. W. H. Bailey, 115 West 21st Street, Oklahoma City, Okla., Sec'y.

Minnesota State Medical Association, Minneapolis, Oct. 12-13. Dr. Carl B. Drake, Central Bank Building, St. Paul, Secretary.

Mississippi Valley Medical Association, Rochester, Minn., Oct. 10-12. Dr. Henry Enos Tuley, 244 Francis Bldg., Louisville, Ky., Secretary.

Missouri Valley, Medical Society of the, St. Joseph, Mo., Sept. 21-22. Dr. Charles W. Fassett, 115 E. 31st St., Kansas City, Mo., Secretary.

Nevada State Medical Association, Reno, Oct. 6-7. Dr. Horace J. Brown, Goldfield, Secretary.

New England Surgical Society, Burlington, Vt., Sept. 22-23. Dr. P. E. Truesdale, 151 Rock Street, Fall River, Mass., Secretary.

Pennsylvania, Medical Society of the State of, Scranton, Oct. 2-5. Dr. W. F. Donaldson, Jenkins Arcade, Pittsburgh, Secretary.

Tri-State District Medical Society, Peoria, Ill., Oct. 30-Nov. 2. Dr. William B. Peck, Freeport, Ill., Managing Director.

Vermont State Medical Society, Burlington, Oct. 12-13. Dr. W. G. Ricker, St. Johnsbury, Secretary.

Virginia, Medical Society of, Norfolk, Oct. 31-Nov. 3. Mr. G. H. Winfrey, 104½ W. Grace Street, Richmond, Secretary.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Public Health, Chicago

August, 1922, **12**, No. 8

*Relation of Contaminated Rations to Presence of C. Botulinum in Milk of Lactating Animals. R. Graham, H. Schwarze and I. B. Boughton, Urbana, Ill.—p. 659.

Diagnostic Chemistry a Routine Function of State Laboratory. S. DeM. Gage and E. Earle, Providence, R. I.—p. 665.

*Proper Cleansing of Glassware and Other Utensils in Public Drinking Places. A. I. Van Saun, A. W. Bancroft and J. J. O'Gorman, New Haven, Conn.—p. 669.

Some Fundamentals in World Health Work. G. E. Vincent, New York.—p. 674.

Public Health Nursing Service in State Department of Health. R. G. Paterson, Columbus, Ohio.—p. 675.

Public Health Conserved Through Enforcement of Postal Fraud Laws. L. F. Kebler, Washington, D. C.—p. 678.

Health Bookkeeping in Harlem Health Center. M. M. Hulst, New York.—p. 683.

C. Botulinum in Milk.—Preliminary evidence reported by Graham et al. suggests that *C. botulinum* may, under certain experimental conditions, gain entrance to the milk via the animal host. The negative results in examining milk from experimental animals during the ten day period preceding the feeding of toxin and spores obviously suggest that the avenues of invasion are related to the contaminated rations, while the part played by a contaminated soil or other extraneous fomites is not excluded. The presence of the spore in fresh milk for immediate consumption is probably of no toxicogenic significance to the human family, if the negative results in guinea-pigs, following injection of fresh milk contaminated with spores, are a reliable guide. However, an experimental teat canal or udder infection was repeatedly transmitted in the milk, as demonstrated in guinea-pigs and possibly in calves. The production of minimum amounts of toxin in the udder could not, however, be demonstrated. The mammary secretion of an artificially infected udder proved positive to *C. botulinum* for several days, following the initial infection. The presence of free toxin in milk filtrate from an infected udder was suggested in only one instance. Repeated examinations failed to demonstrate free toxin in other milk samples from infected udders. In view of the negative results in guinea-pigs, the possibility of *C. botulinum* toxin being excreted in the milk of lactating animals consuming contaminated feed is remote, though the contamination of milk from feces or other sources is not to be disregarded, since milk furnishes a favorable medium for the development of toxin in vitro.

Proper Cleansing of Glassware and Other Drinking Utensils.—It is advised by Van Saun et al. that wherever possible, hot water of a temperature of at least 145 F., in which a sufficient quantity of an easily dissolved soap powder has been placed should be used for the washing of glasses or other containers, which should be submerged in the solution and left there for at least three minutes. For places not equipped for washing glasses with hot water the saturated solution of chlorinated lime is suggested. Glasses disinfected with this solution should, of course, be rinsed thoroughly. Glasses should be dried thoroughly. Experiments have shown that clean, dry glasses do not usually harbor bacteria.

Annals of Surgery, Philadelphia

August, 1922, **76**, No. 2

Plastic Surgery of Face. E. D. W. Highsmith, Atlanta, Ga.—p. 129.

Harelip and Cleft-Palate Deformities. Some Types and Their Operative Treatment. W. B. Davis, Philadelphia.—p. 133.

Operative Treatment of Complete Double Harelip. V. Veau, Paris, France.—p. 143.

*Experimental Reconstruction of Esophagus with Autogenous Fascia Lata Transplants. D. S. Allen, St. Louis.—p. 157.

*Extirpation of One (Left) Suprarenal for Cure of Epilepsy. H. Fischer, New York.—p. 176.

Surgical Value of Estimation of Bile Pigmentation (Icterus Index) of Blood Serum. D. W. Stetten, New York.—p. 191.

*Surgical Treatment of Cholelithiasis, Cholecystectomy and Choledochotomy: Continuous Outdoor Treatment. J. O'Conor, Buenos Aires.—p. 201.

Malignant Neoplasms of Extrahepatic Biliary Ducts. K. Renshaw, Rochester, Minn.—p. 205.

Perforation of Duodenal Ulcer Following Gastro-Enterostomy. F. M. Douglass, Toledo, Ohio.—p. 222.

*Lymphosarcoma of Intestine. P. L. DeNoyelles, Albany, N. Y.—p. 229.

Metaplasia in Ovarian Dermoids and Cystadenomas: Report of Three Cases. W. C. MacCarty and H. D. Caylor, Rochester, Minn.—p. 238.

*Primary Tumors of Urethra. A. J. Scholl, Jr., and W. F. Braasch, Rochester, Minn.—p. 246.

Malignancy of Undescended Testis—Associated with Hydrocele. B. Lipshutz, Philadelphia.—p. 260.

*Results of Treatment in Forty-Eight Cases of Sciatica. W. O. Ott, Rochester, Minn.—p. 272.

Use of Fascia Lata to Reconstruct Esophagus.—Allen describes a method of reconstructing portions of the entire circumference of the esophagus with fascia lata transplants. The result is said to be a tube lined with squamous epithelium derived from the epithelium which normally lines the esophagus.

Extirpation of One Suprarenal to Cure Epilepsy.—Fischer reviews the work done by Heinrich Fischer, who proved that the capacity of the body to react with convulsions is dependent on a sufficient amount of functionally active suprarenal substance. The suprarenals belong, probably inclusive of the whole chromaffin system in the body, to the convulsive mechanism. His experiments have also shown that there exists a peripheral component of the cramp mechanism in the body. The peripheral component joins with the central component in the musculature by means of the peripheral nerves. On the other hand, there exists a direct continuation between the cerebral sympathetic system and the suprarenals by means of the sympathetic nerves. The cortex of the suprarenals, as part of the chromaffin system, is directly derived from the sympathetic. A complete cycle of the cramp mechanism is hereby formed. The author reports a case of epilepsy of long standing in which he removed the left suprarenal. Before the operation this patient had from ten to fifteen epileptic attacks every night. The convulsions were so severe that his three brothers had to hold him down to prevent him from falling out of bed. Although the patient has not been entirely cured, there is noticeable, however, a distinct improvement. The attacks which he had before the operation are now less in frequency and in intensity. He has intervals of complete freedom from convulsions.

Cholecystectomy and Choledochotomy.—O'Conor describes a method of cholecystectomy and of choledochotomy which is simple in execution, which admits of operative rapidity in a zone in which indefinite manipulation is likely to cause shock, which reduces hemorrhage to a minimum, and which from start to finish permits of one being able to see what one is doing. On the fourteenth day after operation the patient is put out of doors.

Lymphosarcoma of Intestine.—Two cases of lymphosarcoma of the intestine are described by Denoyelles, one of tumor of the jejunum, the other of the ileum. In one instance the tumor was a diffuse infiltration of the intestinal wall, an annular type of growth. In the other case a lymphosarcomatous polyp was found which gave rise to an intussusception. The predominant cell is one which resembles a great deal the transitional large mononuclear cell of the blood.

Primary Tumors of Urethra.—Three cases of epithelioma of the female urethra and one of the male urethra and a case of fibroma of the female urethra are reported by Scholl and Braasch from the Mayo Clinic. Benign solid tumors are only rarely seen in the urethra. The majority of these belong to the group of fibromyomas. One case of fibroma of the female urethra is reported.

Epidural Injections in Sciatica.—In forty-eight cases of sciatica in which no definite causative factor could be found, repeated epidural injections, combined with the removal of possible foci of infection in a large percentage, resulted in permanent cure in 29 per cent., and permanent amelioration of symptoms so that the patient was able to continue his occupation with a fair degree of comfort in 37 per cent.; in the remaining 34 per cent. no permanent beneficial results were obtained.

Archives of Dermatology and Syphilology, Chicago

August, 1922, **6**, No. 2

Dermatologic Training and Practice. O. S. Ormsby, Chicago.—p. 129.
*Serologic Studies on Exudate of Syphilitic Chancres. C. Fuentes, Havana, Cuba.—p. 136.
Clinical Evaluation of Wassermann Reaction. R. A. Kilduffe, Pittsburgh.—p. 147.
*Potassium Permanganate as Curative Agent in Dermatologic Diseases. S. Feldman and B. F. Ochs, New York.—p. 163.
Dermatoscopy. J. C. Michael, Houston, Tex.—p. 167.
Ulcer of Leg. Its Localization as Point of Differential Diagnosis. H. Goodman, New York.—p. 179.

Serologic Study on Exudate of Syphilitic Chancre.—In the exudate from chancres which are clinically syphilitic Fuentes has found a substance that acts as amboceptor in the Wassermann test. In the exudate of the same chancres he has found another substance that acts as antigen in the Wassermann test. In the exudate from chancres which are clinically negative with no spirochetes, no antigen or amboceptor has been found. While only one mixed chancre was studied, both antigen and amboceptor were found besides spirochetes. The substance that acts as amboceptor and the substance that acts as antigen were found together when their presence was demonstrated. While both substances appeared together, it has been possible to demonstrate their presence independently using the Wassermann test for this purpose. In all the exudates from the chancres examined which contained spirochetes both antigen and amboceptor have always been found. No case was positive for spirochetes and negative for antigen and amboceptor. Exudates from chancres that were clinically positive but in which no spirochetes were found contained both antigen and amboceptor. The amount of complement in these exudates is not sufficient to change the positive or negative reaction.

Potassium Permanganate in Epidermophytosis.—Potassium permanganate has, so far, given Feldman and Ochs better results in the treatment of epidermophytosis than any drug or combination of drugs hitherto employed. It can be used in strengths ranging from 1:5,000 to the full saturated solution, the former in early, moist and irritated lesions, the latter in those associated with deep infiltration and lichenification. Cases of intertrigo of the mammary folds and on the upper thighs yield readily to very dilute solutions (1:5,000), while in the intertrigenous type of epidermophytosis occurring between the fingers and toes stronger solutions may be employed with equally good results. Unmistakable results are obtained in eczema marginatum by wet dressings and, in old lesions, by painting with strong solutions of the drug. Patches situated on the flat surface of the body are occasionally resistant to treatment. In eczematoid ringworm, far better results are obtained by this method of treatment than is seen with the use of Whitfield's ointment. These cases require a longer period of treatment in order to obtain a cure than those enumerated in the foregoing and the treatment must be kept up a long time after the disappearance of the lesions in order to make the results permanent. The dyshidrotic form is the most resistant to treatment, especially in the presence of deep-seated vesicles and a thickened epidermis. Even here good results are obtained after the lesions are prepared by some keratolytic agent.

Archives of Neurology and Psychiatry, Chicago

August, 1922, **8**, No. 2

Interrelations of Domain of Neuropsychiatry. A. Meyer, Baltimore.—p. 111.
*Subacute Epidemic (Lethargic) Encephalitis. J. H. Globus and I. Strauss, New York.—p. 122.
*Cranial Hyperostoses Produced by Meningeal Endotheliomas. H. Cushing, Boston.—p. 139.
*Histopathology of Cerebral Carcinoma. G. B. Hassin and H. D. Singer, Chicago.—p. 155.
*Metabolism Studies in Dementia Praecox and Manic Depressive Insanity. T. Raphael and J. P. Parsons, Ann Arbor, Mich.—p. 172.
*Determination of Sodium, Potassium, Calcium and Magnesium in Blood and Spinal Fluid of Patients Suffering from Manic Depressive Insanity. P. G. Weston and M. Q. Howard, Warren, Pa.—p. 179.
*Sugar Tolerance in Dementia Praecox and Other Mental Disorders. W. F. Lorenz, Madison, Wis.—p. 184.

Subacute Epidemic Encephalitis.—The lesions of the small vessels from such an uncommon and most prominent feature in the six cases of the acute form of lethargic encephalitis studied by Globus and Strauss that they believe that the primary attack of the virus is on the small and medium sized vessels, and that these are affected to a degree proportionate to the virulence of the virus.

Cranial Hyperostoses Produced by Meningeal Endotheliomas.—In a series of more than 700 verified tumors reported on by Cushing, there have been eighty endotheliomas, their ratio to the gliomas being about one to four. At least 25 per cent. of the endotheliomas are accompanied by an overlying hyperostosis cranei which is either palpable externally or demonstrable by the roentgen ray. This process is due to invasion of the bony canals by tumor cells, with resultant stimulation of osteoblasts and the production of new bone.

Histopathology of Cerebral Carcinoma.—Hassin and Singer have studied eight cases of intracranial carcinoma. From their studies they believe it possible to establish certain features as common to all cerebral carcinomas. The brain lesions caused by carcinomatous growth are both focal and diffuse. The focal lesions are due to direct invasion by carcinoma cells. The diffuse lesions are of the type of a toxic (noninfiltrative) encephalitis. Reactive phenomena are mainly of connective tissue and may result in the formation of a demarcation zone. In the absence of a demarcation zone, a transition zone is constant and indicates destruction of the adjacent parenchyma prior to invasion by carcinoma cells. Propagation of the tumor takes place by infiltration and along perivascular spaces. Reactive phenomena occur in the pia-arachnoid and in the choroid plexus.

Metabolism in Dementia Praecox and Manic Depressive Insanity.—On the basis of the data secured by Raphael and Parsons in a study of three normal persons and fifteen psychotic subjects (dementia praecox and manic depressive insanity), it appears that in normal persons the blood sugar rise following the intramuscular injection of 1 mg. of epinephrin is maximal in from thirty minutes to one hour with subsidence in three and one-half hours. This is in accord with the findings reported by Hamman and Hirschman and by Cowie and Beaven. The reaction pit or point of minimal glycemia is definitely below the initial fasting level following which there is a definite rebound to approximately this level. Further, it appears that among the psychotic subjects the general contour is essentially the same as among normal persons for the first three and one-half hours, following which, however, the depressed and dementia praecox patients become variant in that a further gradual drop is noted with slight or no indication of rebound, a deviation which conceivably may be of basic metabolic import.

Metallic Elements in Blood and Spinal Fluid in Manic Depressive Insanity.—In order to determine whether the manic and depressed phases of manic depressive insanity are associated with an alteration of the normal balance of sodium, potassium, calcium and magnesium in the blood and spinal fluid, analyses were made by Weston and Howard of these two fluids in seventeen cases of mania and in ten of depression. The average of these elements was practically the same in both states, and the individual variations from the average were small. The average sodium content of the blood and fluid in mania was 332 and 333 mg., respectively, and in depression, 330 and 328 mg., respectively. The results with potassium were also constant—mania, blood and fluid, 21.7 and 12.8 mg., respectively; depression, 22 and 12.7 mg., respectively. The blood and fluid calcium in mania was 10.4 and 5.2 mg., respectively, and in depression, 10.6 and 5.4 mg., respectively. Magnesium in mania showed 2.4 mg. for the blood and the same amount for the fluid; in depression the figures were 2.4 and 2.5 mg., respectively.

Sugar Tolerance in Dementia Praecox.—Except in cases of active catatonia, certain cases of simple deteriorating dementia praecox and several cases in which evident emotional upsets existed at the time of the test, Lorenz' investigation points to a blood sugar concentration in mental disease that is practically normal when the test is made while the patient is fasting, the average being 0.105 per cent. The response of patients with mental disease to sugar feeding is generally within normal range. Patients in the active stages of catatonic dementia praecox responded to glucose

feeding with a hyperglycemia that resembles the response obtained in hyperthyroidism. Several patients with simple deteriorating dementia praecox responded to glucose feeding in a manner that resembles the responses obtained in certain endocrine disturbances, such as dyspituitarism. Patients suffering from manic depressive insanity—depressed phase—responded to the sugar test with a curve higher than that found in normal subjects.

Boston Medical and Surgical Journal

Aug. 17, 1922, **187**, No. 7

Diagnosis of Diseases of Urinary Tract. W. C. Quinby, Boston.—p. 229.
Diagnosis of Early Breast Tumors, Based on Their Clinical Picture or Their Gross and Microscopic Picture at Exporatory Incision. J. C. Bloodgood, Baltimore.—p. 243.
Varicose Veins and Ulcer: Methods of Diagnosis and Treatment. J. Homans, Boston.—p. 258.

Endocrinology, Los Angeles

July, 1922, **6**, No. 4

*Studies on Parathyroids. III. Two Cases of Combined Enlargement of Thymus and of Lower Parathyroids. H. Bergstrand, Stockholm, Sweden.—p. 477.
*Nature and Diagnostic Significance of White Line of Sergent ("Ligne Blanche Surrenale"). S. Wright, London.—p. 493.
*Relation of Suprarenals to Muscular Activity. F. A. Hartman, Buffalo. —p. 511.
*Case of Spontaneous Disappearance of Diabetes. G. L. Rohdenburg, New York.—p. 519.

Enlargement of Thymus and Parathyroids.—In a woman, aged 22, with a curious and unexplained record of illness, who died suddenly, there were found, besides slight signs of an infection in the air passages, two parathyroid glands showing extreme enlargement, due most probably to autonomous growth. The thymus showed a similar extreme enlargement caused by a supranormal amount of parenchyma and interstitial tissue quite different from that of the juvenile type. It differed from the hyperplastic thymus in exophthalmic goiter in that only the values for cortex and medulla were supranormal, while the total number of Hassall's corpuscles was considerably lower than normal for a corresponding age. There was probably not only a relative but also an absolute decrease in the new formations of Hassall's corpuscles. There was a striking similarity to the thymus in a case of "lymphatismus" described by Hammar. The case affords further support of Hammar's theory that the different components in the thymic parenchyma may independently vary in amount. In a woman, aged 58, who had an attack of hemiplegia and died about a month later from a second attack, the two lower parathyroids showed enlargement due in all probability to autonomous tumor growth. The thymus was markedly enlarged with a parenchyma value more than ten times the normal. As in the preceding case, the thymus was taken to be hyperplastic, not subinvoluted. All the parenchyma components were increased, cortex and medulla to the same degree, but the Hassall's corpuscles to a smaller extent. The values for the Hassall's corpuscles per milligram parenchyma and medulla, respectively, were therefore low. In spite of the differences between them, the cases fall into a sharply defined group in which the hyperplastic thymus differs from that of exophthalmic goiter.

Significance of Sergent's White Line.—The white line of Sergent is described and the literature of the subject is reviewed by Wright. It is shown by an investigation of 100 healthy persons that the white line is a phenomenon occurring in a large proportion of normal subjects and is without pathologic significance. A number of analogous physiologic responses are described. The white line is not related to suprarenal insufficiency nor to abnormally low systolic or diastolic pressure. The white line is produced by local emptying of the capillaries due to the active contraction of some elements in their walls, and is quite independent of the condition of the arterioles. A nervous mechanism of the nature of an axon reflex may be involved. The bearing of this investigation on the clinical recognition of suprarenal insufficiency is discussed.

Relation of Suprarenals to Muscle Activity.—Hartman states that in normal animals, except in rare instances, there is an increase in the output of epinephrin accompanying exercise. This increase is greater, the more vigorous and the more prolonged the exercise. The increased output of epinephrin persists for some time after the exercise ceases, the duration of the increase depending to some extent on the amount of work performed. Injections (intramuscular) of epinephrin improve the output of work in many normal cats and in cats with epinephrin deficiency. An animal can go farther and travel faster when there is an increase in the epinephrin output during exercise. Epinephrin may hasten the onset of convulsions due to exercise.

Spontaneous Disappearance of Diabetes.—Rohdenburg reports a case of glycosuria accompanied by the usual clinical symptoms of diabetes, in which the glycosuria disappeared and in which, at necropsy, fibrosis of the thyroid was found, accompanying which there was partial fibrosis of the glandular elements of the pancreas associated with hypertrophy of the islands of Langerhans.

Journal of Medical Research, Boston

June-July, 1922, **43**, No. 3

Proposed Method for Estimating Capacity of Left Ventricle of Heart. H. E. Robertson and P. H. Duff, Rochester, Minn.—p. 253.
*Repair and Activation of Thyroid in Hypophysectomized Tadpole by Parenteral Administration of Fresh Anterior Lobe of Bovine Hypophysis. P. E. Smith and I. P. Smith, Berkeley, Calif.—p. 267.
*Periarteritis Nodosa with Classification of Pathology. W. H. Harris and A. V. Friedrichs, New Orleans.—p. 285.
*Pathologic Lesions Produced in Kidney by Small Doses of Mercuric Chlorid. M. L. Menten, Pittsburgh.—p. 315.
Microchemical Distribution of Potassium in Normal Kidneys and in Those in Which Pathologic Changes Have Been Produced by Mercuric Chlorid. M. L. Menten, Pittsburgh.—p. 323.
Spontaneous Agglutination of Bacteria in Relation to Variability and to Action of Equilibrated Solutions of Electrolytes. R. R. Mellon, Rochester, N. Y.—p. 345.

Activation of Thyroid.—The experiments made by Smith and Smith indicate that in order to establish a successful therapy in cases of hypopituitarism it will be necessary to inject the active principle of hypophysial anterior lobe substance and not to administer larger oral doses. Such treatment should be successful since one of the factors necessary for the best use of anterior lobe substance is already present, namely, a "physiologic deficit."

Periarteritis Nodosa.—The augmented name of "periarteritis nodosa aneurysma thrombotica" is suggested by Harris and Friedrichs as a means of aiding in the diagnosis of the gross pathology presented at the necropsy table. The name periarteritis nodosa alone does not conform with the lesions usually found, although it is representative of the microscopic picture presented. The failure to diagnose the gross lesions when fresh material is available has no doubt accounted for the small amount of etiological investigation reported. It is for this reason that an addition to the name is suggested.

Effect of Mercuric Chlorid on Kidney.—Intravenous injections of mercuric chlorid made by Menten in amounts as low as 0.00002 gm. per kilogram of weight, cause microscopic pathologic changes in kidney and liver of the rabbit. These lesions are well defined five minutes subsequent to the termination of the injection.

Journal of Pharmacology and Experimental Therapeutics, Baltimore

August, 1922, **20**, No. 1

Influence of Colloids on Action of Noncolloidal Drugs. V. Further Analysis of Augmentor Effect of Lecithin on Action of Pilocarpin. W. S. Van Leeuwen and A. V. S. Gyorgyl, Leiden.—p. 1.
*Rhododendron Poisoning. S. W. Hardikar, Edinburgh.—p. 17.
*Relation of Histamin to Intestinal Intoxication. II. Absorption of Histamin from Intestine. J. Measkins and C. R. Harington, Edinburgh.—p. 45.
*Evaluation of Hormone of Infundibulum of Pituitary Gland in Terms of Histamin, with Experiments on Action of Repeated Injections of Hormone on Blood Pressure. J. J. Abel and C. A. Rouiller, Baltimore.—p. 65.

Rhododendron Poisoning.—Hardikar states that andromedotoxin, the active principle of the rhododendron, acts on the terminations of the vagus which it first stimulates and then paralyzes. It paralyzes the motor nerve ends in striped muscle; while the paralysis is developing, the muscle and nerve are more easily fatigued, but regain their excitability after a period of rest. Death from andromedotoxin occurs in

two forms: with very large doses it supervenes rapidly and is due to a direct action on the heart, the ventricles being arrested in diastole or partial systole. With smaller doses, it is due to failure of the respiration through a paralysis of the phrenics and often of the diaphragmatic muscle also. There is a narcotic action on the higher centers in the brain; the spinal cord is not affected. It produces a condition of arrhythmia in the heart dependent on a direct depressant action on the conducting tissue between the auricle and ventricle leading to heart-block, or upon the excitability of the ventricle itself. The poison has a slight vasoconstrictor effect of peripheral origin on the blood vessels. Involuntary muscle which is not supplied by the vagus is not affected. The seat of the emetic action of the poison has not been determined. At least a third of the poison injected hypodermically leaves the body unchanged in the urine.

Absorption of Histamin from Intestine.—Measkins and Harington have determined that the rate of absorption of histamin from the intestine, as measured by the rate of fall of blood pressure produced, is greatest from the ileum, somewhat less from the duodenum, and very much less, though still perfectly definite, from the cecum and stomach. Absorption experiments with an Eck fistula in operation indicate that the liver exercises a protective function, probably more mechanical than chemical, against heavy doses of histamin. With the mucous membrane damaged by cutting off the blood supply for from five to fifteen minutes the fall of blood pressure would indicate that absorption takes place at first with a rush and then almost ceases.

Evaluation of Hormone of Infundibulum of Pituitary.—A method is described by Abel and Rouiller which yields a preparation of the pressor-oxytocic principle of the infundibulum, which is actually equal in oxytocic activity to from twenty to thirty times its weight of the acid phosphate of histamin or from twelve to eighteen times its weight of histamin dihydrochlorid. It is estimated that when the active principle is freed entirely from the accompanying inert material, it will be found to be weight for weight from forty to fifty times more powerful in its action on the guinea-pig's uterus than histamin. The powerful solution with its extremely low content in organic matter, which is obtainable by the method described, exhibits all of the really characteristic physiologic activities of ordinary saline extracts of the infundibulum. The results obtained with relatively pure solutions and with the salts obtained from them lead the authors to believe that the vasomotor, oxytocic and renal action of their preparations are only the expression of the manifold physiologic properties of one and the same hormone. In addition to this principle the infundibulum also contains depressor substances which have been described in previous papers. The methods described in this paper effect a clean separation of the pressor-oxytocic substance from these depressor substances.

New Orleans Medical and Surgical Journal

August, 1922, **75**, No. 2

*Surgical Aspects of Benign Lesions of Breast. W. E. Sistrunk, Rochester, Minn.—p. 47.
*Cesarean Section Under Local Anesthesia, in Puerperal Eclampsia. J. A. Hendrick, Shreveport, La.—p. 57.
Importance of Vaginal Drainage in Pelvic Infections. J. F. Dicks, New Orleans.—p. 60.
*Intravenous Injections of an Organic Calcium Salt in Treatment of Tuberculosis. J. B. Lobenhoffer, New Orleans.—p. 65.
*Acute Infections in Spasmophilic Child. L. Von Meysenbug, New Orleans.—p. 78.
Why Radium Is Looked on with Disfavor by Some of Our Profession. C. H. Voss, New Orleans.—p. 82.

Improving Operative Results in Breast Lesions.—Further improvement in the results from operation for cancer of the breast from a change in the technic of the radical operation as it is performed by most surgeons at the present time, Sistrunk says, need not be looked for. Recurrences in early cases come mainly in positions which will never be accessible to the knife and the only chance of bettering results lies in earlier operation. If all cancers could be discovered through exploratory operations before definite clinical diagnoses are possible, a very high percentage of patients would be cured permanently. Certainly the results now obtained will not be improved by the "watching and waiting" policy. As the public becomes better educated, surgeons will no doubt be consulted oftener for tumors of the breast which in reality do not exist. After careful examination in these cases, the surgeon must be able to say that no tumor is present. These patients should be kept under observation until it is certain that the trouble complained of has completely disappeared. The conservative policy in dealing with conditions of the breast in which the question of malignancy enters at all will, even in the hands of the best surgeons, tend only to increase the number of deaths from cancer.

Cesarean Section Under Local Anesthesia in Eclampsia.—Ten cases are reported by Hendrick which were full-term pregnancies, presenting the symptom complex of eclampsia, profoundly toxic, convulsions frequent and severe, labor not set in and no dilatation of the cervix, rendering the condition so grave that delivery by some method was frankly indicated on admission. Cesarean section under local anesthesia was done with no loss of life to the mothers or babies, except in one case, that of a fetus which had been dead for several days.

Calcium Chlorid in Pulmonary Tuberculosis.—Lobenhoffer injects a 5 per cent. solution of calcium chlorid beginning with 100 c.c. in adults increasing the following doses to 150 c.c. Even 200 c.c., representing 10 gm. of the dry salt, was repeatedly tolerated without difficulty. About 200 patients have been treated by Lobenhoffer but he is not yet ready to make a report on results except to say that they have not been bad and that comparatively large doses of calcium are well tolerated.

Acute Infections in Spasmophilic Child.—For the immediate relief of the convulsions, von Meysenbug says, nothing works so well as chloral hydrate given by rectum. To a child of 2 years, 10 grains may safely be given. These cases have a lowered blood calcium and this can be raised by the administration of calcium by mouth. Perhaps the best form of calcium to use is calcium bromid in from 5 to 10 grain doses every three hours. This may be combined with a little sugar of milk. It should not, however, be given in combination with sodium bicarbonate, for the calcium ion and the sodium ion have an antagonistic action.

New York Medical Journal and Medical Record

Aug. 16, 1922, **116**, No. 4

Serpent Worship and Dawn of Medicine. J. Wright, Pleasantville.—p. 185.
Action of Various Substances on Liver. M. Einhorn, New York.—p. 188.
Hay-Fever and Pollen Therapy. R. O. Clock, Pearl River.—p. 193.
Successful Treatment of Hay-Fever and Causes of Failure. W. Scheppegrell, New Orleans.—p. 196.
Immunization Therapy in Hay-Fever. A. I. Rubenstone, Philadelphia.—p. 198.
Hay-Fever: Desensitization by Ingestion of Pollen Protein. M. G. Touart, New York.—p. 199.
Locating Fetal Heart Sounds. L. Drosin, New York.—p. 200.
Theory and Practice of Steinach Operation. H. Benjamin, New York.—p. 203.
Roentgen-Ray Treatment of Diseases of Generative Organs. I. S. Hirsch, New York.—p. 208.
Malnutrition in Infancy: Its Various Phases in Relation to Treatment. L. H. Dembo, Lancaster, Pa.; and H. R. Litchfield, Brooklyn.—p. 216.
Artificial Infant Feeding for General Practitioner. R. J. Melman, Philadelphia.—p. 221.
Drug Addict. J. A. Hamilton, New York.—p. 223.

Ohio State Medical Association Journal, Columbus

August, 1922, **18**, No. 8

Spontaneous Evolution in Transverse Presentation. S. J. Goodman, Columbus.—p. 541.
Chronic Infectious Arthritis (Still's Disease). S. D. Foster, Toledo.—p. 543.
Physician, Health Official and Cooperation. M. F. Hussey, Sidney.—p. 545.
Dermatoses of Present Day Interest. J. W. Miller, Cincinnati.—p. 547.
Eye and Nasal Symptoms in Pituitary Disease: Report of Case of Acromegaly. F. W. Alter, Toledo.—p. 550.
Differential Diagnosis and Treatment of Some Pulmonary Diseases with Special Reference to Artificial Pneumothorax. L. Mark, Columbus.—p. 554.
Phenol and Cresol Poisoning. R. Isaacs, Cincinnati.—p. 559.

Philippine Journal of Science, Manila

April, 1922, **20**, No. 4

New or Noteworthy Philippine Plants, XVII. E. D. Merrill, Manila.—p. 367.

Public Health Journal, Toronto

July, 1922, **13,** No. 7

Muncipal Control of Milk Supply. A. G. Fleming.—p. 289.
Production of Clean Milk. E. H. Stonehouse.—p. 293.

Rhode Island Medical Journal, Providence

August, 1922, **5,** No. 8

Rickets and Tetany in Infancy. W. T. Buffum, Jr., Providence.—p. 287.
Some Aspects of Treatment of Diabetes. A. M. Burgess, Providence.—p. 290.

Surgery, Gynecology and Obstetrics, Chicago

August, 1922, **35,** No. 2

*Traumatic Asphyxia. T. M. Green, Wilmington.—p. 129.
*Hyperplasia of Rudimentary Lymph Nodes of Prostate. N. Fukase, Hakodate, Japan.—p. 131.
*Syncytioma (Atypical Chorioma) of Uterus Terminated by Acute Peritonitis. H. E. Meleney, Peking, China.—p. 137.
Meckel's Diverticulum. A. McGlannan, Baltimore.—p. 142.
Some Experiences with "Meltzer-Lyon" Test in Gallbladder Disease. E. C. Cutler and F. C. Newton, Boston.—p. 146.
Lipoma of Tendon Sheaths. Report of Case and Review of Literature. A. Strauss, Cleveland.—p. 161.
Splenectomy in Banti's Disease, Third Stage. Report of Two Cases, One with Positive Wassermann Due to Jaundice. D. Fisher, Ohio.—p. 171.
*Cancer of Prostate: Comparison of Results Obtained by Radium and Surgical Treatment. H. C. Bumpus, Rochester, Minn.—p. 177.
Leukocytosis Following Gynecologic Operations. R. A. Scott, Evanston.—p. 181.
Endeavor to Evaluate Chronic Sepsis in Pregnancy. J. E. Talbot, Worcester.—p. 187.
Bandl's Ring and Difficult Labor. P. T. Harper, Albany, N. Y.—p. 198.
Efficiency in Diagnosis of Neoplasms. W. C. MacCarty, Rochester, Minn.—p. 209.
Round Worm (Ascaris Lumbricoides) in Gallbladder. A. P. Butt, Elkins, W. Va.—p. 215.
*Radiotherapy in Carcinoma of Breast. G. E. Pfahler, Philadelphia.—p. 217.
Surgical Diathermy and Radiotherapy in Cancer of Uterus. G. Kolischer, Chicago.—p. 227.
Simplified Apparatus for Transfusion of Blood by Citrate Method. W. H. Byford, Chicago.—p. 229.
Production of Temporary Paralyses in Treatment of Difficult Cases of Congenital Dislocation of Hip Joint. G. Robertson, Dunfermline, Scotland.—p. 230.
Clinical Method of Determining Adhesions Between Stomach and Gall Tract. B. B. V. Lyon, Philadelphia.—p. 232.

Traumatic Asphyxia.—Green's patient went down in a diving suit to ascertain the damage to a vessel. While at a depth of 37 feet, his air connection became interfered with for a period of ten minutes and when taken out of the diving suit he showed the characteristic appearance of traumatic asphyxia. He was never unconscious, but was having small hemorrhages from the mucous membrane of the eyes, nose, mouth and rectum. Respiratory function was very shallow and irregular, but improved immediately with artificial respiration and oxygen. His mentality seemed to be normal after the accident. His face was swollen and markedly discolored. The discoloration went as low as the third rib in front and on the back outlined the double triangle formed by the trapezius muscles. This discoloration began at the margin of the hair as a deep red and gradually merged into a dark purple. It disappeared rapidly and was practically all gone at the end of the fourth day, except the eyes, which faded very much more slowly. He was discharged from the hospital at the end of the fifth day. There was never any permanent disability as a result of the accident.

Hyperplasia of Lymph Nodes of Prostate.—Fukase asserts that small, primitive, or rudimentary lymph nodes occur normally throughout the prostate in the form of very small aggregations of lymphocytes located beneath the glandular and duct epithelium, most marked toward the outlets of the ducts. They are analogous to the rudimentary lymph nodes found in other organs, such as the liver, kidneys, uterus, etc. Hyperplasia of these rudimentary lymph nodes of the prostate occurs chiefly in chronic hyperplastic prostatitis and in primary carcinoma of the prostate. In both conditions, the hyperplasia is essentially an inflammatory one due to chronic infection or irritation, and possesses the same significance that such hyperplasias have in other parts of the body. In the absence of chronic inflammation, a hyperplasia of the primitive lymph nodes of the prostate occurs in the lymphatic constitution, and may be found also in other generalized diseases of the lymphoid system, as Hodgkin's disease, lymphocytoma and leukemia. In both inflammatory and noninflammatory hyperplasias well developed germinal centers may be produced in the hyperplastic node. Other evidences of functional activity by these hyperplastic nodes are shown in the metastasis of pigment, tubercle bacilli and carcinoma cells to them.

Atypical Chorioma: Syncytioma.—A case of atypical chorioma is reported by Meleney in which the necropsy showed a small tumor in the right cornu of the uterine cavity, acute infection of the endometrium extending through vessels about the right fallopian tube, acute diffuse peritonitis, and hemolytic streptococcus bacteriemia. The tumor consisted only of syncytial cells lying singly and in clumps in the swollen stroma of the uterine mucosa and in the superficial portion of the myometrium. The case illustrates the importance of early determination of the cause of uterine bleeding, not only in order to deal properly with the tumor itself, but also to avoid a termination by acute general infection.

Radium and Surgery in Cancer of Prostate.—The results obtained thus far by radium in the treatment of cancer of the prostate, Mumpus shows, are inferior to those obtained by surgery. A combination of radium and surgery offers the best results.

Radiotherapy in Breast Cancer.—Thorough radiation treatment of cancer tissue will devitalize the cancer cells so as to interfere with their inoculation or further development. This, Pfahler says, justifies anteoperative treatment. Radiation effects are most evident on new growing tumor and such radiation will prevent the growth of inoculated tumors. Therefore, he recommends active postoperative treatment of cancer of the breast. Visible and palpable recurrent metastatic cancer are probably only an index of similar disease elsewhere, and therefore the treatment of these cases should not be confined simply to the palpable and visible disease. Such visible and palpable disease should receive the most active treatment and sufficient to cause its destruction and disappearance. Thorough radiation treatment will cause disappearance of tumor tissue in some cases, and therefore can be recommended when there is any reason for avoiding an operation. In every case of cancer of the breast there should be a roentgen-ray examination of the chest, and this should be repeated from time to time to detect any possible invasion of the mediastinum or lungs, sternum or spine.

Texas State Journal of Medicine, Ft. Worth

August, 1922, **18,** No. 4

Rational Use of Physiologic Salt Solution Intravenously. E. H. Bursey, C. H. Harris and W. S. Horn, Fort Worth.—p. 192.
Goiter Summary. C. M. Rosser, Dallas.—p. 196.
Pathology of Goiter A. C. Scott, Jr., Temple.—p. 200.
Toxic Adenoma of Thyroid Gland. P. C. Gunby, Sherman.—p. 204.
Surgical Treatment of Exophthalmic Goiter. J. A. Hill, Houston.—p. 205.
Surgical Treatment of Goiter. J. E. Quay, Waco.—p. 208.
Roentgen Ray Therapy of Hyperthyroidism. I. W. Jenkins, Waco.—p. 213.
Insects in Relation to Health of Man. F. C. Bishopp, Washington, D. C.—p. 215.
Dengue Fever: Preliminary Report of Epidemic at Galveston. L. Rice, Galveston.—p. 217.
Suprarenal Support in Phenol Poisoning: Report of Case with Recovery. C. F. Hayes and W. S. Horn, Fort Worth, Tex.—p. 218.

U. S. Naval Medical Bulletin, Wahington, D. C.

August, 1922, **17,** No. 2

Fish Poisoning in Virgin Islands. F. D. Walker.—p. 193.
Chemical Analysis of Blood. C. W. O. Bunker.—p. 202.
Weil-Felix Reaction. J. H. Chambers.—p. 211.
Aviation Medicine in U S. Navy. J. F. Neuberger.—p. 214.
Functions and Organization of Medical Corps Units Serving with Marine Corps in Field. S. N. Raynor.—p. 220.
Gas Warfare. Effects of Poisonous Gases—Early and Late. W. R. Galwey.—p. 230.

West Virginia Medical Journal, Huntington

August, 1922, **17,** No. 2

Appendicitis in Children. B. B. Wheeler, Beckley.—p. 41.
Tonsil as Source of Focal Infection. T. W. Moore, Huntington.—p. 48.
Exophthalmic Goiter. H. H. Haynes, Clarksburg.—p. 56.
Report of Two Cases of Hypertrophic Pyloric Stenosis. C. L. Holland, Fairmont.—p. 65.
Unexplained Constitutional Symptoms Caused by Foreign Body in Tissues. M. J. Schroeder, New York.—p. 69.
Relative Value of Radium and Roentgen-Rays in Cancer Therapy. I. Levin, New York.—p. 79.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

Brain, London

June, 1922, **45**, No. 1

*Study of Thomsen's Disease, Based on Eight Cases, in Family Exhibiting Remarkable Inheritance Features in Three Generations. J. Rosett, New York.—p. 1.
*Anatomy of Spina Bifida. V. H. Keiller, Galveston, Tex.—p. 31.
*Cerebellar Stimulations. F. R. Miller and F. G. Banting, London, Can. —p. 104.
*Three Cases of Suprapituitary Tumor Presenting Fröhlich's Syndrome. C. N. Armstrong.—p. 113.
Nervous Control of Urinary Bladder in Amphibians. F. J. F. Barrington.—p. 126.

Thomsen's Disease in Family.—In the first generation of the family described by Rosett, myotonia congenita and psychopathies coexisted in the same person, but in the second generation there is a clear-cut segregation of the two disorders, each becoming associated with a definite physical type of person; three individuals of a certain type became affected with Thomsen's disease, and the other three, of a different physical type, became affected with psychoses. In the third generation the psychosis, as well as the physical type associated with it, are eliminated. Four new types appear, each represented by one individual who has inherited from a respective parent, not a blood relation of the affected family, that parent's physical type and normal constitution. The rest of the members of the third generation are all of the myotonic type of the second generation, and they are all, with the possible exception of one who has not been studied, affected with myotonia. Rosett suggests that the mendelian phases of the family described may help to throw some light on two of the pathologic features of Thomsen's disease—the abnormally large musculature usually associated with it, and the muscular atrophy which is sometimes observed. Three of the nine cases described have suffered no physical discomfort from the disease, which they are almost certain to transmit to their posterity. Finally, one patient suffered from a form of Thomsen's disease which has greatly facilitated the study, and has to a great extent explained the mechanism, of the abnormal muscular action. The other is an instance, no one knows how rare, in which the manifestations of the disorder are evoked by strong psychic stimuli only. If it were not for the fact that this patient is a member of a myotonic family, and that she belongs to a group of persons marked by certain physical characteristics, the examination would have been inadequate, and her trouble would almost certainly have been regarded as a form of hysteria. The cases reported are analyzed in great detail.

Anatomy of Spina Bifida.—Keiller emphasizes certain features in the minute structure of cases of spina bifida which have a direct bearing on details of operative procedure, and on prognosis as regards nervous function after and apart from operation. A full discussion of seven cases is presented also a review of such literature as was obtainable.

Cerebellar Stimulations.—Evidence is adduced by Miller and Banting to prove that the cerebellar cortex is excitable. The reaction chosen as a test was the inhibition of decerebrate rigidity evokable by stimulation of the surface of the cerebellum. Reasons are given for concluding that this reaction is induced as the result of a state of excitation in the cortical neurones of the cerebellum.

Frölich's Syndrome with Suprapituitary Tumor.—The three cases described by Armstrong are instances in which Fröhlich's syndrome was present in a more or less pronounced form associated with unusual types of tumor in the base of the brain, none of which started in or infiltrated the pituitary body. In the first two cases the tumor was a cystic ependymoma, and in the third case a cholesterin containing cyst.

British Medical Journal, London

Aug. 19, 1922, **2**, No. 3216

Bacteriophage (Bacteriolysin). I. Nature of Bacteriophage. F. d'Herelle.—p. 289.
Id. II. Breaking Down of Bacteria by Associated Filter Passing Lysins. F. W. Twort.—p. 293.
Id. III. Concerning Theories of So-Called "Bacteriophage." J. Bordet. —p. 296.
Id. IV. Andre Gratia.—p. 296.
Id. V. J. C. G. Ledingham.—p. 297.
Id. VI. J. W. McLeod.—p. 298.
Bacteriology of Influenza. I. M. H. Gordon.—p. 299.
Id. II. J. McIntosh.—p. 303.
*Action of Flavine Antiseptics on Localized Pyogenic Infections. C. Bennett, J. W. S. Blacklock and C. H. Browning.—p. 306.
Case of Interstitial Gestation (Left Cornii). J. W. Heekes.—p. 309.

Action of Flavine on Infections.—The results are recorded by Bennett, Blacklock and Browning of a series of more than 600 severe burns and pyogenic conditions treated in hospital wards continuously with flavine antiseptics (acriflavine or proflavine) by a simple method. The points specially investigated have regard to the rate and progress of formation of granulation tissue, ossification, and healing of skin epithelium. Only those cases are considered in which intimate contact of the tissue with the antiseptic occurred. As compared with other methods of treatment, there was clinically no interference with formation of granulation tissue. There was no evidence of pellicle formation or necrosis. There was no tendency to hemorrhage beyond the slight oozing which occurs from the tips of well vascularized granulations denuded of their surface in the act of changing dressings and which is to be regarded as evidence of their healthy state. Ossification proceeded actively in periosteal granulation tissue under application of flavine. Epithelial regeneration, both in the form of ingrowth from surrounding skin and from grafts proceeded actively in contact with dressings soaked in flavine solution. Histologic examination in representative, unselected cases have confirmed and supplemented the clinical observations.

Journal of Tropical Medicine and Hygiene, London

July 15, 1922, **25**, No. 14

Plant Dermatitis. H. N. Ridley.—p. 225.
Passages of Medical Interest from West Indian Notebooks of Dr. Louis W. Sambon.—p. 227.

Lancet, London

Aug. 12, 1922, **2**, No. 5163

*Critical Examination of Current Views on Internal Secretion. S. Vincent.—p. 313.
*Epidemic Diarrhea, Analysis of 84 Fatal Cases. D. Paterson and D. Nabarro.—p. 320.
Circumcision Under Local Anesthesia. R. Roper.—p. 326.
*Nasal Obstruction in Infants. J. A. Jones.—p. 327.
*Effect of Bismuth on Kidneys. H. B. Day.—p. 328.
Labor Obstructed by Solid Carcinomatous Tumor of Left Ovary. S. G. Luker.—p. 329.
*Trauma as Cause of Chronic Gastric Ulcer. H. E. Griffiths.—p. 329.
Pneumothorax Following Breathing Exercises. J. Crocket.—p. 330.

Views on Internal Secretion.—Admitting that there is no objection to the investigation of the activities of tissue extracts, so long as the investigator realizes that the results are in themselves only of pharmacologic interest Vincent says it is only when several other lines of research have been explored that conclusions about an internal secretion may be drawn. Furthermore, it is still desirable to point out that the term "internal secretion" has been used too generally and too confidently. Knowledge of internal secretion is not yet even remotely comparable in accuracy and definiteness with knowledge of "external" or ordinary glandular secretion. With the exceptions of the various preparations of the suprarenal bodies, the thyroid and pituitary bodies, these animal substances have not been shown to possess any specific characters or to exercise any definite physiologic action on the economy. Their continued and indiscriminate exploitation constitutes one of the worst forms of present-day quackery. Manufacturing druggists, Vincent continues, are not the only, nor, indeed, the chief offenders in this matter. They after all only push upon the market what they are likely to be able to sell, and their prospect of sale depends on the recommendations of physicians. It is the physician's duty, therefore, to be much more critical in drawing conclusions from an apparent beneficial effect of the administration of extracts of organs and tissues. This is all the more necessary when more than one kind of substance is given at one and the same time. It is sometimes urged that the body will pick out the substance it needs and will discard the others. This kind of argument has influenced therapeutic practice throughout the ages, but it is of doubtful value and

needs the check of careful observation. There is a special need of great caution when the substances are administered by the mouth. With the exception of those from the thyroid, it is very doubtful in Vincent's opinion whether any of the organic preparations have any action, physiologic or therapeutic, when given in this way. He urges that if the subject of internal secretion, in both its clinical and its physiologic aspects, is not to fall into utter disrepute, it must be treated with infinitely more of scientific discrimination than has hitherto been the case. The ordinary criteria of evidence must be duly regarded, and workers in all fields must realize the necessity for adequate and rigid control experiments.

Epidemic Diarrhea.—In Paterson's investigation the fatal cases seemed to fall into two definite groups—those with and those without a previous history of indigestion. Except for the history, these two types are indistinguishable clinically in the later stages. The intestine was involved in an equal percentage of both groups and to an equal extent. The duration of the disease did not influence the extent of the pathologic lesion in the intestine. The most constant pathologic finding was a gross fatty change in the liver—this change was an almost invariable finding in the previously healthy group. The infectiousness of this disease was no strikingly evident on analysis of these fatal cases. The observation of Ballard—that the 4 foot earth temperature reaching 56 F. is synchronous with the outbreak of diarrhea—was borne out in this series of cases. Paterson states the feeding both during and after the acute symptoms is of the utmost importance, and that the original symptoms are reproduced when certain foods are administered in some cases. The administration of saline subcutaneously, intraperitoneally, and fluids by the mouth are essential to make up for the fluid losses and dehydration present. The intraperitoneal method, on the whole, seemed to be the best method of administration when the symptoms were urgent, and should be given at not more than 100 F. Paterson cautions that this method is not devoid of danger and should be retained for those cases in which the urgency is marked.

Nasal Obstruction in Infants.—The causes of infantile nasal obstruction enumerated by Jones are: (1) congenital occlusion of the nostrils, (*a*) of the anterior nares, by means of a congenital web of skin at the junction of the vestibule with the nasal chamber proper, and (*b*) of the posterior nares, where a diaphragm consisting of bone, or partly of bone and partly of membrane, may partially or totally obstruct one or both choanae; (2) temporary presence of mucous secretion in the nose, and engorgement of the nasal mucosa, during the first few days of life before mouth breathing is established; (3) congenital syphilis; (4) mongolism; (5) adenoids. The symptoms are: (*a*) inability to suckle efficiently; (*b*) snoring when asleep and frequent suffocative attacks; (*c*) persistent cough; (*d*) nasal discharge; (*e*) convulsions, a comparatively rare symptom; (*f*) otorrhea. Treatment varies with the cause.

Effect of Bismuth on Kidneys.—Day has encountered certain toxic effects following the intravenous injection of bismuth, which are not mentioned in articles quoted. The preparation he used was the liquor bismuthi et ammonii citratis (B. P.), which contains about 9 per cent. of bismuth citrate. Injections of 0.5 or 1 c.c. had no general bad effect, but on repetition a black line formed on the gums with sometimes a stomatitis, the condition resembling a mixed effect of lead and of mercury. But intravenous injection, especially when the large dose of 2 c.c. was given, gave rise to signs of poisoning. There were nausea or actual vomiting and slight diarrhea in most patients. But the most striking result was a copious diuresis, unaccompanied by strangury or other signs of vesical irritation. The action of bismuth was tried in two cases of actual nephritis. In one patient, a case of acute nephritis associated with chronic bacillary dysentery, a definite diuresis, lasting some days, followed immediately on the intravenous injection, and his condition improved; in the other patient, a case of chronic nephritis, no change either for better or worse was observed.

Trauma as Cause of Gastric Ulcer.—Griffiths relates the case of a man who was struck in the epigastrium by the handle of a spade. He collapsed and vomited blood stained material. He was treated for gastric ulcer. About two months later Griffiths did an exploratory laparotomy and found an ulcer about a quarter of an inch in diameter on the anterior aspect of the stomach near the pylorus and the lesser curvature.

South African Medical Record, Cape Town

July 22, 1922, **20**, No. 14

Outlook of Radiotherapy, with Special Reference to Roentgen Rays. J. Van Rooyen.—p. 262.
Treatment of Growths of Upper Air and Food Passages. J. C. G. Macnab.—p. 266.
Hits and Misses in Diagnosis of Skin Eruptions. C. Pijper.—p. 268.
Case of Madura Foot. H. W. Dyke and N. M. Macfarlane.—p. 270.
Influence on Eyestrain of Plane of Vision During Reading. A. Verwey.—p. 271.
*Human Anthrax and Arsphenamin. A. H. Louw and A. Pijper.—p. 273.

Arsphenamin in Human Anthrax.—The treatment of human anthrax by means of intravenous injections of arsphenamin or its substitutes has been employed by Louw and Pijper in eleven cases. All the patients made a very speedy recovery.

National Medical Journal of China, Shanghai

June, 1922, **8**, No. 2

Salient Points About Recent Pneumonic Plague in Harbin. J. W. H. Chun.—p. 71.
*Treatment of Asiatic Schistosomiasis. E. S. Tyau.—p. 83.
Fifty Cases of Fibroid Tumors of Uterus. P. K. Liang.—p. 86.
*Medical Aspect of Life Insurance in China. C. W. Low.—p. 94.
Blood Pressure in Healthy Individuals. C. L. Kao.—p. 101.
Schistosoma Infection of Dog. H. P. Chu.—p. 116.
Addison's Disease; Report of Case. U. K. Koo.—p. 120.

Treatment of Asiatic Schistosomiasis.—One of the problems of Oriental medicine that needs immediate attention, Tyau says, is Asiatic schistosomiasis, a disease which is steadily spreading. Tyau gives tartar emetic in sterile distilled water, freshly prepared once a week, and injected intravenously once every other day. The initial dose is ¼ grain to be increased each time ¼ grain up to the maximum dose of 2 grains. The maximum dose is continued once every three days until, repeatedly, a negative finding of the stool is obtained. And this is taken as evidence of cure, although not as scientific as Fairley's complement-fixation reaction. Symptoms of improvement usually appear after the patient has received more than 20 grains of the remedy, as evidenced by the reduction in size of the spleen and liver, disappearance of fever and dysenteric stools, and marked gain in color and weight.

Life Insurance in China.—In China life insurance is either never thought of or unknown to many people of all walks. The rich are well satisfied with their possessions, and, in fact, find it not necessary to bother themselves with life insurance. On account of the cost of life insurance and the low earning capacity, the poor are unable to take any policy. The rate of mortality and morbidity in the Chinese is high, so the cost of life insurance in China is greater than that of American and European countries. Similar to many foreign industrial and financial enterprises, the functions of life insurance and the benefits derived from it are not yet wholly understood by the general public. The life insurance companies enroll the majority of policyholders from the government officials, members of the army and the middle class of people. Low discusses this subject for the benefit of Chinese physicians, telling them about the medical staff, qualifications of medical examiners, important points in medical examinations, etc.

Annales de Médecine, Paris

June, 1922, **11**, No. 6

*Physiology of the Sympathetic System. L. Bard.—p. 453.
*The Liver in the Tuberculous. N. Fiessinger and P. Brodin.—p. 474.
Experimental Reactions in the Lung. A. Gaieysse-Pellissier.—p. 495.
Histologic Lesions of the Salivary Glands in Mumps. Delater.—p. 503.
*Gliomatosis of the Brain. Bertrand and G. Medakowitch.—p. 509.

Physiology of the Sympathetic System.—Bard says that when treatment has to be merely symptomatic, an exact knowledge of the pathologic physiology of the symptoms is highly desirable. We have a number of drugs that act on the sympathetic system, but they require further study as to their action on the peripheral receiving apparatus or

on the reflex centers, instead of giving the drug blindly on the mere assumption of excessive or deficient sympatheticotonia, without discrimination as to the exact condition.

The Liver in the Tuberculous.—Fiessinger and Brodin present evidence to show that disease of the liver is liable to rouse an old tuberculous focus, and favor the generalization of the tuberculosis. They cite some typical instances of this sequence. Fatty degeneration of the liver is frequently found at necropsy of the tuberculous, and with every progressive tuberculous lesion there are signs that the liver is suffering more or less. With liver disease, the tuberculin test is overwhelmingly negative even in the tuberculous. This anergy testifies to impairment of the defensive reactions, and the practical conclusion is evident that the liver should be spared as much as possible in the tuberculous. Alcohol in particular should be proscribed. "In torpid tuberculosis, blind overfeeding should be avoided, as also that absurd digestive therapeutics in which custom calls for the association of toxic drugs such as creosote, guaiacol, arsenic, phosphorus and others for this alleged antisepsis which is as nonexistent in tuberculosis as in medical pathology otherwise. . . ." Liver organotherapy might be logically indicated, but whether it succeeds or not does not alter the fact of the "hepatic anergy."

Gliomatosis of the Brain.—The twenty photomicrograms reproduced sustain the authors' assertions that a glioma is a complex reaction of all the elements of the brain tissue.

Archives de Médecine des Enfants, Paris

July, 1922, **25**, No. 7

Influenza in Children. E. Weill and A. Dufourt.—p. 385.
*Tuberculin in Whooping Cough. P. Nobécourt and Forgeron.—p. 394.
Sifting Out the Tuberculous in School Inspection. J. Bouquier and A. Routhier.—p. 401.
Hydrargyria; Two Cases. C. Pelfort.—p. 420.
Open Air Schools in France. J. Comby.—p. 423.

Tuberculin Skin Reaction in Whooping Cough.—Nobécourt and Forgeron present evidence that pertussis renders tuberculin tests negative in the tuberculous children, and seems to speed up the tuberculosis. They obtained a positive response to the tuberculin skin test in only 5.4 per cent. of the thirty-seven children tested, while necropsy in a number of the negative cases showed tuberculosis in 27 per cent. and in many of the negative skin test cases the reaction had previously been positive. The reaction became negative during the pertussis even in children with unmistakable tuberculous tracheobronchial glands. The whooping cough thus modifies conditions and induces anergy, and this favors the development of the tuberculosis in pertussis as well as in measles and influenza.

Bulletin de l'Académie de Médecine, Paris

June 27, 1922, **87**, No. 26

*Action of Quinidin. H. Vaquez and Leconte.—p. 704.
*Masked Auricular Fibrillation. P. Ribierre and R. Giroux.—p. 718.
*The Diet in Diabetes. J. Dumont.—p. 721.
*Pregnancy and Tuberculosis. F. Dumarest and P. Brette.—p. 724.

Action of Quinidin on the Heart.—Vaquez and Leconte review in detail their experience with this drug, and remark that, so far, nothing is known which will reveal whether it is going to benefit or not, or whether the effect will be transient or durable. Even when it does not restore the rhythm to approximately normal—as in valvular disease—yet the subjective relief is often pronounced. It may also enhance the action of digitalis or ouabain, previously inert. In complete solitary arrhythmia—in which quinidin is particularly effectual—it seems to push the heart back into a preceding phase of the affection, and thus postpones the failing of compensation. Nausea and diarrhea may be observed in some cases, but this is unimportant, and the only harm is if the drug is suspended in consequence. A tendency to syncopes was noted in one case, but was explained by the grave disease. Pulmonary embolism has been observed even with digitalis, and it is evident that any active drug which forces the heart to contract vigorously when it contains clots is liable to force some of them into the blood stream. But no one thinks of abandoning digitalis on this account. A case of sudden death has been reported under quinidin, but it was a case of complete heart block, and this should have contraindicated the use of this drug. They advocate progressive doses, beginning with 0.4 to 0.6 gm. and reaching 1 or 1.4 gm. in three or four days. It may be well to precede quinidin with digitalis or ouabain to stimulate the heart beforehand, on account of the depressing action of quinidin. The failure of one course may not testify to the complete inefficacy of the drug, as they have had it sometimes prove successful at a later trial.

Masked Auricular Fibrillation.—Ribierre and Giroux describe a case in which nothing but the electrocardiogram revealed the true causes of the paroxysmal tachycardia and arrhythmia, with extrasystoles, and apparently normal intermissions. The masked auricular fibrillation revealed by the electrocardiogram imposes an entirely different prognosis on the case.

Simplification of Dietetic Treatment of Diabetes.—Dumont expatiates on the great advantage in diabetes of giving carbohydrates that generate levulose rather than glucose. Every year since 1915 he has thus guided the diet in about twenty cases each year, and gives the details of one typical case. With a weight of 100 kg. the man averaged from 200 to 250 gm. of glucose daily in about 2,500 to 2,800 c.c. of urine. Milk was dropped and bread reduced to 200 gm., and the glucose output declined to 135 gm. and to 106 gm. when boiled potatoes were given instead of bread. Then vegetables producing inulin (jerusalem artichokes, salsify and scorzonera or viper's grass) were taken to a total of 150 gm. at a meal, and the glucose in the urine dropped to 3.6 gm. and the polyuria and polydipsia declined. Then the artichoke was dropped, but the glucose increased only to 10.8 gm. on the ordinary diet. Then for three months the artichoke was resumed, and the glucose disappeared almost completely. As the end of the year approached, the urine averaged only 2.5 gm. of glucose. In another case the output was 200 gm. of glucose and there was a carbuncle on the head. The man was cured in a few weeks and the glycosuria disappeared after the carbohydrates were given in the form of artichokes. He says, "This valuable plant reeducates the intestine by the levulose it brings and the modification of the intestinal flora. Foods producing inulin and levulose seem to reenforce the defensive forces of the diabetic while supplying the elements necessary for energy and heat."

July 11, 1922, **88**, No. 28

*Pregnancy and Tuberculosis. E. Sergent.—p. 23.
Treatment of Whooping Cough. G. Carrière.—p. 30.
*Esophagus Vasomotor Reflex. F. J. Collet.—p. 34.
*Tetrachlorethane Poisoning. Frois.—p. 40.
Coincidence of Sunspots and Exacerbations of Chronic Diseases. J. Vallot, G. Sardou and M. Faure.—p. 41.

Pregnancy and Tuberculosis.—The optimistic views of Dumarest and Brette were summarized recently, page 591, when published elsewhere. Sergent protests against them. He acknowledges that the arrest of menstruation does have a favorable influence on tuberculosis, but that this lull is only transient. The disease flares up after delivery with ever greater intensity. He has had instances of tuberculous women passing safely through one or more pregnancies, but the disease in their case was always the torpid stagnating type, not active at the onset of gestation. In the discussion that followed, Bar asserted that when a pregnant woman unmistakably tuberculous does not react to the tuberculin test, no matter how minute the pulmonary lesion seems to be, she is gravely affected. If the pregnancy is not terminated until after the fourth month, it is too late, and even between the third and fourth, the outcome is dubious.

Esophagus Vasomotor Reflex.—Every attempt to introduce the sound in progressive dilation of the cicatricial stenosis of the esophagus in the girl of 19 induced intense redness of the face, ears, arms and chest. It was accompanied with profuse salivation, acceleration of the pulse and other vasomotor phenomena. Collet found this same reflex in other persons tested, but much less pronounced.

Tetrachlorethane Poisoning.—Frois explains that artificial ventilation stirring up the air is not enough to prevent the toxic action from absorption of the fumes of this solvent. In twelve fatal cases reported in England the liver and kidneys suffered most and the blood did not show any alteration. He

explains that the fumes are heavy, and the best means for prophylaxis is to draw them down and out with an exhaust ventilator. By this arrangement the manufacture of artificial pearls, for instance, can be carried on without danger of serious harm. (An abstract discussing the early diagnosis of this poisoning was given in these columns, Jan. 14, 1922, page 146.)

Bulletin Médical, Paris

June 10, 1922, **36,** No. 24

Balance in Foods and Nutrition. G. Mouriquand.—p. 471.
*Thrombosis in Hemorrhagic Conditions. P. Emile-Weil and Isch-Wall. —p. 478.
Recent Works on Therapeutics. G. Lyon.—p. 479.

Thrombosis in Hemorrhagic Conditions.—Weil and Wall analyze a case of febrile asystolia in a woman of 32 with hemoptysis and petechial hemorrhages and the blood findings of purpura. Necropsy disclosed a typical infarct in the lung and both auricles clogged with white clots, and thrombosis in femoral and humeral arteries, etc. There was thus a combination of two apparently opposite conditions, thrombosis and a hemorrhagic state. Some infection induces the thrombosis, and the production of the clots entails a hemorrhagic tendency in the rest of the blood.

June 24, 1922, **36,** No. 26

Bismuth in Treatment of Syphilis. Simon and Bralez.—p. 523.
Diabetes of Syphilitic Origin. F. Rathery and P. Fernet.—p. 527.
*Colloid Reactions of Cerebrospinal Fluid. G. Laroche.—p. 530.
The Fight Against Syphilis. L. Bizard and J. Bralez.—p. 532.

Colloid Reactions of the Cerebrospinal Fluid.—Laroche reiterates that the colloidal benzoin test is instructive in various forms of neurosyphilis. In general paresis the benzoin reaction is very pronounced, as also often in tabes. In clinically progressing forms of cerebrospinal syphilis, the colloidal benzoin reaction is positive. When progressing syphilitic lesions have disappeared and only sequelae remain, such as hemiplegia, paralysis, etc., the colloidal benzoin reaction is often negative. In secondary syphilis, the benzoin reaction is positive only in patients having pronounced hyperalbuminosis and hypercytosis, with positive Wassermann reaction. The reaction is negative in patients with lesions of the nervous system of nonsyphilitic origin. It is always negative in epidemic encephalitis while the Wassermann reaction may be positive. Comparing the Wassermann reaction and the colloidal benzoin reaction in neurosyphilis, one may be positive while the other is negative, and vice versa. Cases exist in which a positive colloidal benzoin reaction alone leads toward a diagnosis of neurosyphilis, confirmed later by the evolution of the disease, and the Wassermann test becoming positive after reactivation with arsenical or mercurial treatment. It is also of real prognostic value, and can give important data on the gravity of clinical cases. It is simple and accurate and should be used in conjunction with the Wassermann reaction, and will give valuable information on the acute and subacute evolution of syphilitic lesions. Laroche describes his technic in detail, and extols the advantages of this colloidal benzoin method over the Lange, Emanuel and other tests.

July 15, 1922, **36,** No. 29

*Inguinal Lymphogranulomatosis. Gastinel and J. Reilly.—p. 577.

Inguinal Lymphogranulomatosis.—Gastinel and Reilly state that during the last few years cases of lymphogranulomatosis seem to have multiplied and have been the subject of many researches. The clinical picture was practically the same in all the twenty cases under their observation. Subacute inguinal adenitis has a tendency to spontaneous suppuration in the superficial glands but they never observed it in the iliac glands. The bacteriologic and experimental arguments presented in their article eliminate tuberculosis in diagnosing the nature of lymphogranulomatosis. On the other hand, Spillmann demonstrated that lymphogranulomatosis and syphilis can develop separately and successively in the same patient. The distinction between soft chancre, bubo and lymphogranulomatosis is more difficult to make, but in a soft chancre bubo, the suppuration involves the whole glandular mass, while in lymphogranulomatosis, the abscesses are multiple and limited. No specific treatment for lymphogranulomatosis has yet been found on account of the lack of knowledge concerning the etiology of the affection.

July 22, 1922, **36,** No. 30

Present Status of Herpes Zoster. A. Civatte.—p. 591.
*Infectious Origin of Multiple Sclerosis. Stefanopoulo.—p. 594.

Infectious Origin of Multiple Sclerosis.—Stefanopoulo gives photomicrograms of the spirochetes found in the cerebrospinal fluid of monkeys, rabbits or guinea-pigs inoculated with cerebrospinal fluid from patients with multiple sclerosis. He calls it the "S micro-organism," and states that the experiments succeeded only in eleven of the sixteen clinical cases, but the micro-organism was found in the spinal fluid in two of the latter.

Bulletins de la Société Médicale des Hôpitaux, Paris

June 30, 1922, **46,** No. 23

*Herpes Zoster in Children. J. Comby.—p. 992.
Vaccine Therapy in Malta Fever. Alfred-Coury.—p. 998.
*Varicella and Herpes Zoster. J. Pignot and H. Durand.—p. 1002. Idem. A. Netter.—p. 1004. Idem. J. Rateau.—p. 1022.
*Pigmentation in Syphilitic. M. Pinard.—p. 1009.
Case of Ophthalmoplegic Migraine. A. Souques.—p. 1012.
*Adiposis Dolorosa. Pasteur Vallery-Radot and M. A. Dollfus.—p. 1016.
*Bile in Test and Treatment for Dysentery. Le Noir and M. de Fossey. —p. 1024.
Herpes Zoster in Epidemic Encephalitis. A. Netter.—p. 1028.
Diagnosis and Treatment of Retropharyngeal Abscess. J. Comby.—p. 1034.
Vaccine and Herpes Zoster. J. Dumont.—p. 1036.

Herpes Zoster in Children.—Comby has encountered 84 cases of herpes zoster in children from 8 months to 15 years old. In none of his cases was ever any connection with varicella apparent, and he protests that there is not the least analogy between the two. In 18 of 25 given the tuberculin test the response was positive. In only 2 cases was the herpes bilateral; it was on the chest in 37 cases, and on the head and neck in 7. In the discussion that followed several instances were cited of herpes zoster and varicella occurring in the same subject with a few years' interval, showing that the immunity conferred by one does not protect against the other, as would be the case if the two were the same disease. Pignot and Durand reported a case of herpes zoster in a woman and varicella developing the thirteenth day in her nursling, 9 months old. Rateau describes a similar case. Netter added 9 new cases to his previous list of this coincidence, a total of 26. He declares that it is not only possible but of frequent occurrence that varicella develops in the environment of herpes zoster when it comprises persons not immunized to varicella by a preceding attack.

Abnormal Pigmentation.—Pinard's patient is a woman of 38 and the pigmentation on the face and breast is like coal dust. There was nothing to suggest diabetes or cirrhosis, but her daughter shows signs of inherited syphilis. On this basis the woman was given treatment as for syphilis, and the pigmentation and the general symptoms notably subsided. Multiple subcutaneous ecchymoses were among her earliest symptoms, appearing with the pigmentation.

Adiposis Dolorosa.—The interest of the typical case of Dercum's disease described lies in the roentgenograms of the pituitary region. They show enlargement of the sella turcica.

Diagnosis and Treatment of Amebic Dysentery.—In dubious cases, Le Noir seeks to enrich the amebas and for this purpose feeds bile. Under the influence of nine capsules of some bile extract daily, diarrhea sets in, and amebas become numerous in the stools. They are young and more amenable to treatment in this stage. This same bile treatment is useful also in confirming the cure.

Gazette des Hôpitaux, Paris

July 13, 1922, **95,** No. 54

*Fatal Syncope After Puncture of Pleura. A. Cain and P. Hillemand. —p. 869.
*Preventive Serotherapy Against Tetanus. Lop.—p. 872.
The Fight Against Cancer. J. Laumonier.—p. 873.

Fatal Syncope After Puncture of Pleura.—Acute pulmonary tuberculosis had progressed extremely rapidly in the woman of 22. Cain and Hillemand had not found tubercle bacilli in the sputum, and the tuberculosis was a necropsy surprise. Three capillary punctures were made at the right

base, without any incident, but the patient's condition became worse, and another puncture was made in a region where clinical and radioscopic examination suggested pleural or pulmonary suppuration. Notwithstanding local anesthesia, the puncture was followed by syncope and convulsions entailing death although all efforts were made to revive the patient. This case does not belong to the group of pleural epilepsy cases. Syncopal manifestations were predominant, and the convulsions occurred only at the last moments. In Apert and Vallery-Radot's similar case, the apparently healthy child of 4 had a small bilateral pleural effusion, and an ordinary exploratory puncture, although made while forcibly holding the scared child, sufficed to produce fatal syncope. Necropsy revealed latent myocarditis. In Cain and Hillemand's case, the suprarenals had an ecchymotic aspect due to intense capillary congestion, with the same effect as suprarenal hemorrhage in infectious disease. Hyperemia was limited to the suprarenals and was not found in other viscera. It was intense enough to disintegrate the gland and entail acute suprarenal insufficiency, which was probably, like the myocarditis in Apert's case, one of the principal causes of death. A pleural reflex, whatever may be its real nature, is susceptible of entailing far reaching disturbances but not death. Death is due to some grave organic lesion which may reveal itself then for the first time, after the reflex is involved. In this case the lesion was evident from the alteration of the suprarenals, but bulbar hemorrhage, cardiac thrombosis or obliteration of large vessels might lead to the same fatal conclusion.

Preventive Serotherapy Against Tetanus in Civilian Practice.—Lop's article was reviewed in the Paris Letter, Aug. 12, 1922, p. 569.

Lyon Chirurgical

May-June, 1922, **19**, No. 3

*Fracture of Both Bones of Forearm. P. Santy.—p. 241.
Isolated Fracture of Lumbar Transverse Processes. M. Oudard and G. Jean.—p. 254.
Walking Splint for Fractured Leg. M. Lagoutte and B. Lambert.—p. 281.
Treatment of Pyosterceral Fistulas. X. Delore and A. Devaux.—p. 285.

Fracture of Both Bones of Forearm.—Santy places the patient prone, the shoulders slightly raised, the arm extending at a right angle, the hand resting on a stool just high enough to flex the elbow. This position is comfortable, and allows access to the forearm from all sides, while it is firmly supported. The only drawback is that the position is rather inconvenient for the anesthetist. He urges the necessity for early, almost emergency intervention when there is displacement with fracture of both radius and ulna. Every hour wasted on nonsurgical measures makes the surgical intervention more difficult. He begins by reducing the radius. If the fracture is oblique, the shaft can be reconstructed by holding the stumps in place with metal bands. If not, a Lane or Lambotte plate has to be screwed to the bone for the osteosynthesis. The intervention has to be repeated on the ulna, and the correction thus realized is maintained with a plaster splint applied to the dorsal aspect of the forearm, in supination, the splint including the elbow and wrist. This plaster immobilization must be continued for a long time. Between 18 and 25 the splint can be removed for a few hours every day after the thirtieth day, to allow a few passive exercises of the arm after the thirtieth day, not before. Active movements should not be begun until the forty-fifth day, under close supervision. In persons over 25, the immobilization should be longer, for forty-five days at least. If then there is any indication of weakness, a tendency to curve or weakness in active supination, the plaster immobilization should be at once resumed. Radiography generally shows then some slight displacement, and loosening of the plate. It is better then to discard the plate and apply a new plaster. In this case Delagenière's grafts have proved extremely useful.

Médecine, Paris

July, 1922, **3**, No. 10

*Diseases of Digestion and Nutrition in 1921. L. Lortat-Jacob.—p. 725.
*Dyspepsia in the Elderly. P. Le Noir.—p. 734.
Etiology of Cirrhosis. M. Garnier.—p. 740.
*Hyperglycemia in Prognosis. F. Rathery.—p. 742.
Manifestations of Syphilis in Stomach. Bensaude and Rivet.—p. 747.
*Gastric Ulcer and Syphilis. A. Cade.—p. 752.
Clinical Varieties of Exophthalmic Goiter. P. Sainton.—p. 754.
*Extrarenal Uremia. P. Merklen.—p. 760.
*Cirrhosis and Syphilis. M. Villaret, H. Bénard and P. Blum.—p. 766.
*Infectious Origin of Gallstones. M. Renaud.—p. 770.
Gout and Cholesterinemia. J. Troisier.—p. 772.
*Secondary Gastric Dyspepsia. G. Faroy.—p. 776.
*Jaundice and Insufficiency of the Liver. E. Chabrol and H. Bénard.—p. 781.
Diabetes Insipidus. L. Lortat-Jacob and R. Turpin.—p. 784.
Medicinal Treatment of Uricacidemia. P. Lassablière.—p. 790.
Diabetes in Children. Hallez.—p. 793.
Preservation of Vitamin Elements. O. Rolland and A. Jouve.—p. 794.
Cholagogues. Hallez.—p. 795.

Diseases of Digestion and Nutrition in 1921.—Lortat-Jacob remarks that the dominant event in this field last year was the discussion of glycemia at the Strasbourg Medical Congress. Diabetes and nephritis are estimated now from the blood, instead of from the urine. The treatment of a diabetic has to be based on his own individual metabolism, the balance-sheet of tentative experiments and the interchanges, studying the effect on one of the changes realized in the other, until a salutary balance is reached. Among the other works of the year he mentions Rist's favorable experience with calcium chlorid by the vein in treatment of the rebellious diarrhea of the tuberculous. He mentions further the promulgation in France of Sippy's method of treating gastric ulcer.

Dyspepsia in the Elderly.—Le Noir comments on the difficulty of excluding gastric cancer in the elderly. It may be simulated by chronic gastritis, or appendicitis, stenosis, arteriosclerosis, the gastric manifestations of uremia, and dyspepsia from deranged bladder functioning. Medical treatment should be addressed to the primary cause, and active drugs should be used less freely than in younger subjects. The condition of the heart, lungs and kidneys should decide the advisability of operative measures, rather than the age.

Hyperglycemia in Prognosis of Diabetes.—Rathery stresses the importance of the *indice glycémique de tolérance*, as an element for the prognosis, that is, the sugar content of the venous blood on a diet comprising the extreme amount of carbohydrates that can be ingested without inducing glycosuria. Each diabetic has his individual glycemia tolerance index, and if this is high, the prognosis should be reserved. The carbohydrates ingested beyond the assimilable amount seem to exert a directly toxic action.

Gastric Ulcer and Syphilis.—Cade recalls that when syphilis is responsible for gastric ulcer, the pains are more irregular and not connected so strictly with the meals as under other conditions. Their predominance at night is also suggestive, and the slight influence of repose and dieting. The pains may be so severe as to suggest tabes, and so tenacious that cancer seems certain, but the most characteristic feature is the hemorrhagic tendency. Hematemesis is frequent and may prove fatal. The first sign of trouble may be profuse hemorrhage from the stomach. The failure of the classic course of treatment for ulcer is presumptive evidence of a syphilitic origin. Castex even asserts that round gastric ulcer is always traceable to syphilis, but Cade protests that this is too sweeping.

Azotemia in Absence of Nephritis.—Merklen calls attention to the retention of urea from oliguria: There is not enough fluid in the kidneys to dissolve the urea enough for its evacuation. This extrarenal uremia from oliguria is common in acute infectious diseases and with asystolia. The azotemia may be due to deranged metabolism, and this is also common with acute infections. One special instance of it is in athrepsia; a progressive increase in the urea of the cerebrospinal fluid indicates a grave outlook even though the kidneys may be sound. There is also liable to be a postoperative extrarenal azotemia, and azotemia in lead poisoning, in liver disease, in anuria and in shock.

Cirrhosis and Syphilis.—Villaret argues that the combination of syphilis and alcohol is responsible for the majority of cases of cirrhosis of the Laennec and Hanot types. This is important for treatment, and cases are being published of a clinical cure when the syphilis element has been eliminated from the clinical picture before irreparable lesions had become installed.

Cholecystitis.—Renaud asserts that cholecystitis may exist without gallstones, but gallstones cannot exist without cholecystitis. The cholecystitis is secondary to some infectious process elsewhere, and unless the latter is cured, the cholecystitis is liable to keep recurring. The primary infectious process may date from childhood. He adds that such experiences are confirming the wisdom of watching over the course of all acute infections in children more carefully, and treating them as serious affections.

Secondary Gastric Dyspepsia.—The gallbladder or the intestine may be responsible for symptoms from the stomach, and Faroy describes a number of cases of this secondary dyspepsia. Colitis is by far the most frequent cause, but it may be so mild as to escape detection. Treatment of the colitis or lithiasis may arrest all the gastric symptoms or they may subside under treatment of the autonomic nervous system, eserin or atropin, etc.

Is Jaundice a Sign of Insufficiency of the Liver?—Chabrol and Bénard insist that jaundice implies merely retention of bile, and that there is no relation between the degree of jaundice and the intensity of the symptoms ascribed to functional insufficiency of the liver. The degree of cholemia is not proportional to the depth and extent of the lesions in the liver.

Paris Médical

July 15, 1922, **12**, No. 28

*Surgery for Children and Orthopedics in 1922. A. Mouchet and C. Roederer.—p. 53.
*Results of Operative Treatment for Cleft Palate. A. Broca.—p. 58.
*Arthrodesis of Hip Joint. Nové-Josserand.—p. 63.
*Torsion of Spermatic Cord in Children. A. Mouchet.—p. 68.
*Fencing Attitude for Grave Scoliosis. C. Roederer.—p. 73.

Surgery for Children and Orthopedics in 1922.—Mouchet and Roederer mention among recent important works in these lines one calling attention to hypertrophy of the transverse process of the seventh cervical vertebra, which has been observed recently, with or without cervical ribs. This anomaly might explain persistence of pains in the arm after resection of a cervical rib. Ombredanne has reported operative correction of a congenitally high scapula in a child. He severed the clavicle before drawing down the scapula.

Treatment of Cleft Palate.—Broca reports 1.5 per cent. mortality in his 529 operations of this kind, all under chloroform. In 447 the operation was concluded at one sitting. Carelessness in the after-care was responsible for 2 of the fatalities; 4 others were explained by diphtheria or pneumonia, but no cause was known for the seventh fatality; death occurred suddenly. In 10 of his latest series of 250, no operation was practicable; in the others, 81 per cent. were cured at once, and 12.8 per cent. after a second operation. In operating on young infants, the operation is easy and rapid, and the child learns to talk later without having bad habits of speech to overcome. These advantages are counterbalanced by the fact that the operation proved successful in only 73 per cent. In each case therefore, the interested parties will have to weigh the lesser certainty of an immediate cure against the greater certainty of better speech.

Arthrodesis of Hip Joint.—Nové-Josserand discusses the indications for the different methods of surgical fixation of a joint. He comments on Maragliano's success with a long bone graft, outside of the hip joint (described in these columns, May 20, 1922, p. 1579). The grafts retained their vitality although they are in contact with bone only at the two ends. He remarks that these surgical procedures applied to the hip joint do not threaten to rouse the tuberculosis, and the results have been very satisfactory. Artificial ankylosis has thus won a place in surgery; it can be regarded now as a rather benign intervention, promising so well that we can safely recommend it, and he prophesies a brilliant future for it.

Torsion of Spermatic Cord in Children.—In one of Mouchet's two cases recently the testicle had twisted in a rather ample vaginalis. In the other case the torsion was of the whole cord and its envelops. The boys were 8 and 9 years old, and the torsion was gradual in the first case, but the acute phase with violent pains occurred in both. Otherwise the clinical picture is that of acute orchitis, but the latter is rare in children. Operative correction should be prompt, to ward off irreparable injury. He resected the testicle in his second case as it was in an abnormal position, and gangrene threatened.

Fencing Position Extension for Scoliosis.—Roederer's illustrations show the excellent results realized in grave right dorsal, plus left lumbar scoliosis, for example, the child seated on the left buttock, the left knee flexed. The right leg is extended backward, the left arm extended forward and upward, the position like that in fencing. The left arm, the trunk and the right leg form a straight line at an angle, with the floor, of about 45 degrees. Openings in the plaster cast allow the passage of broad bands for traction from opposite sides. The results in the thirty cases in which this method has been applied for about a month are said to have been infinitely better than with the Abbott method.

Presse Médicale, París

July 8, 1922, **30**, No. 54

*Congenital Scoliosis. A. Mouchet and C. Roederer.—p. 577.
*Heliotherapy for Tuberculous Arthritis in Adults. J. Doche.—p. 579.
*Typhus According to Recent Russian Writers. L. Cheinisse.—p. 581.

Pathogenesis and Evolution of Congenital Scoliosis.—The motto heading this article is, "There is not one but various forms of congenital scoliosis." It was one of the leading addresses at a recent congress, and was summarized in the Paris Letter on page 673. Eight illustrations show the different types of congenital scoliosis.

Heliotherapy for Tuberculous Arthritis in Adults.—Doche reviews his experiences in 171 cases given treatment at a seashore sanatorium. The general condition should dominate the indications for treatment; in the total of 171 cases the joint focus was isolated in only ninety-six cases. The main thing for both adults and children is to improve the general condition so that the organism can carry on its own fight and defence, and this is what we try to accomplish with heliotherapy.

Early Diagnosis of Typhus.—Cheinisse describes an early sign of typhus to which Vinokourov called attention and which promises to be as instructive as Koplik's spots in measles. The mucous membrane of the mouth and throat is congested, and the front of the uvula is studded with punctiform petechiae, some as large as the head of a pin. Similar punctate extravasations may be found in scarlet fever and whooping cough, but there is little danger of confounding these with typhus. This sign seems to be constant during the first two days, reaching its height the third day and then disappearing by the fourth or fifth day. Complications have been found more frequent in Russia with typhus than with typhoid or relapsing fever, the figures being 29.9; 11.2 and 4.42 per cent. In all of them the complications were almost always in the soft parts or parotid glands. Dmitriev reports gangrene of the legs in 173 of his 9,239 cases of typhus, and only thirteen recovered of the 173. An abortive action from mercury is possible only in the first four days of the disease. It was realized in twenty-three of twenty-nine patients between 15 and 30, and in three of twenty-two others between 30 and 45.

July 15, 1922, **30**, No. 56

*Influence of Retention of Salt on the Respiratory Apparatus. F. Bezançon, S. I. de Jong and A. Jacquelin.—p. 597.
*Immunization Against Diphtheria. J. Renault and P. P. Lévy.—p. 599.
*Therapeutic Applications of Adsorption. L. Cheinisse.—p. 602.

Injurious Influence of Retention of Salt on the Respiratory Apparatus.—Bezançon and his co-workers have been testing 35 patients with cardiorenal disease, examining for albuminuria and tube-casts, chloridemia, uremia, the blood pressure, and the preceding bronchopulmonary history. Then the sodium chlorid intake was reduced to 1.5 gm. a day until the condition was stable, and then 10 gm. of sodium chlorid was given on four consecutive days, and the lung and respiratory findings recorded during this "chloridation period." The reaction in the cardiorenal cases with old respiratory affections was essentially bronchial or alveolar or both. The size of the heart and liver, the pulse, the peripheral edema and the weight showed little if any modification in this group, while in those subjects with previously normal res-

piratory apparatus, the disturbances from the retention of the salt were of these different kinds. The respiratory affection thus seemed to be the point of lesser resistance, where the effect of the retained sodium chlorid was felt most. They then turned their attention to patients with asthma, chronic bronchitis, and sclerosis but free from known disease of heart and kidneys. They reasoned that an unsuspected functional incapacity might possibly be inducing more or less retention of sodium chlorid, and that this was aggravating the respiratory affection. This surmise proved to be correct in 4 of 19 subjects examined. Nothing had ever suggested kidney disease; the blood pressure, urea content and Ambard constant were within normal range, but the daily 10 gm. of sodium chlorid induced edema and respiratory symptoms, and 9 others had their bronchopulmonary symptoms decidedly aggravated. Paroxysmal dyspnea was noted in 6 of the 19, most pronounced at night. In 8 cases expectoration became much more profuse, and in some it became purulent.

It is evident that the organism seeks to cast off through the bronchi some of the retained sodium chlorid. The research reported teaches the practical lesson that, in all affections of the respiratory apparatus, the intake of salt must not surpass the amount that can be duly eliminated. It also teaches the wisdom of a salt-poor or salt-free diet in asthma, bronchitis and other respiratory affections, regardless of whether they have heart or kidney disease or not. Simple reduction of the intake of salt is more effectual in combating their dyspnea, etc., than antispasm and sedative drugs. The salt-poor diet should be supplemented with diuretics. In cases with failing compensation, digitalis may improve conditions in regard to respiration and expectoration.

Immunization Against Diphtheria.—Renault and Lévy have been experimenting for over fifteen months with a modification of the Zingher toxin-antitoxin method of immunizing against diphtheria. They inject fifty toxin units with 5,000 antitoxin units, mixed together just as they are to be used. They thus treated thirty-two children giving a positive Schick reaction, and the effects seemed to parallel closely those of the American writers.

Therapeutic Applications of Adsorption.—Cheinisse deplores that so little use is made of animal charcoal in treatment of poisoning, in typhoid, in cholera and other febrile gastroenteritis cases. If 3 gm. of finely pulverized animal charcoal is stirred into 65 c.c. of a 0.15 per cent. solution of methylene blue and filtered, the filtrate shows no trace of the stain. It has all been adsorbed by the charcoal. This adsorption is reversible in time, and hence a purgative should be given with the charcoal when used internally, to hasten its evacuation before absorption can occur. It should be given stirred into a pint of water, and no food should be taken for two hours at least. Animal charcoal is a universal and model adsorbent, and that made from blood is a better adsorbent than from bone. The unit of adsorbing power is that 0.1 gm. of the charcoal should adsorb at least 20 c.c. of a 0.15 solution of methylene blue. As the charcoal can adsorb only what is free in the alimentary canal, it should be given as early as possible, before absorption has occurred; in dysentery it should be given without waiting for the bacteriologic findings.

Revue Médicale de la Suisse Romande, Geneva

February, 1922, **42**, No. 2

Tincture of Garlic in Treatment of Gangrene of Lung. M. Roch.—p. 65.
Sacralization of Fifth Lumbar Vertebra. G. Turini.—p. 75.
*Lumbar Pain with Vertebral Disease. A. Jentzer and L. Baliasny.—p. 81.
Neo-Arsphenamin and Anti-Anthrax Serum in Anthrax. J. Roux.—p. 98.
Subcutaneous Calcareous Concretions. A. Cramer.—p. 111.
Case of Lamblia Intestinalis. A. Reverdin and E. Chomé.—p. 118.
Simultaneous Rupture of Spleen and Kidney; Recovery After Splenectomy Plus Nephrectomy. J. Roux.—p. 119.

Pain in Lumbar Region.—Jentzer and Baliasny remark that signs of inflammation and ankylosis of vertebrae have been found in skeletons of the stone age, but the war brought spondylosis and spondylitis into prominent interest. The general assumption is that there is always more or less pain with spondylitis, but eleven cases are described here which show that there are six forms of spondylitis: that without pain and that with pain; a pseudospondylitis with or without pain; a posttraumatic form, and the spondylitis for which tuberculosis or gout is responsible. Radioscopy has demonstrated that bony excrescences, twisting and curvature of the spine may be encountered in any of these forms, and hence are not characteristic of spondylitis deformans. Before ascribing the lumbar pain to any spinal affection, we must exclude lumbago, the girdle pains of tabes, gastric ulcer, a calculus in the kidney, colitis, etc. We know that spondylitis may have periods of complete remission, absolutely free from pain, and that spondylosis (spondylitis deformans) develops silently. Spondylitis appears as a rule between 20 and 50, and proceeds by waves. Pain distinctly limited to one vertebra, the roentgen findings negative, suggests incipient Pott's disease, spondylitis, or metastasis of cancer. In one of the cases reported, obstinate constipation and abdominal pain were finally explained by a secondary vertebral affection, although this had never caused local pain. With any accident to the spine, a roentgenogram should be taken at once, to compare with the findings four or five months later, in accident insurance cases, etc. Tuberculous spondylitis is painful if the process is close to the periosteum, but not when in the center of the bone. Tuberculous foci have often been found thus in the depths of the bone which had been absolutely silent during life. Cold and wet are often the only factors that can be determined in spondylitis with an intermittent clinical course. Treatment depends on the differential diagnosis, as Pott's disease requires strict immobilization, while true spondylitis with pains, and the false, with or without pains, the posttraumatic and the gouty, may yield with remarkable facility to physical measures, electrotherapy, galvanization with the positive pole on the lumbar region, medical massage and Swedish gymnastics.

March, 1922, **42**, No. 3

Deceptive Forms of Appendicitis. Appendicitis and the Menopause. C. Julliard.—p. 129.
Abnormal Cardiopulmonary Murmur in the Tuberculous with Pleural Symphysis. F. Loup.—p. 147.
*Primary Cancer of Lung. A. Cramer and C. Saloz.—p. 160.
Data for Lectures on Venereal Diseases. A. Lassueur.—p. 171.
Prophylaxis of Goiter. F. M. Messerli.—p. 176.

Primary Cancer of Lung.—The malignant disease was correctly diagnosed in six of the eight cases described, all seen in 1921. The recognition of the cancer may depend on some minute bunch in the skin or scrap of cancer coughed up. The sharp pain in the side, acute, lancinating, continuing for months, spreading to the arm, was a striking symptom in most of these cases. The differential importance of this stitch in the side, *point de coté*, has not been appreciated hitherto. The rapidly invading course of the process in the lung, without other signs of tuberculosis, testifies further to the neoplastic disease.

Schweizerische medizinische Wochenschrift, Basel

July 20, 1922, **52**, No. 29

*History of Iodin Treatment of Goiter. E. Bircher.—p. 713.
Reflexes and Muscular Reactions in the Fetus. M. Minkowski.—p. 721. Cont'd.
*Iodin Content of Thyroid. E. Herzfeld and R. Klinger.—p. 724.
The Sputum with Influenza Pneumonia. E. Liebmann.—p. 727.
*Resection of Stomach for Perforation. D. Eberle.—p. 729.

Dangers of Iodin Treatment of Endemic Goiter.—Bircher remarks that according to the Swiss newspapers and the medical press, iodin prophylaxis and treatment of goiter is the most important discovery of recent decades. Physicians and school teachers and others are vying with each other in giving iodin to those in their charge, but, he says, the harm wrought by this in cases of goiter is already so great—much of it irreparable—that this abuse of iodin must be halted before it is too late. He recalls that burnt sponge was used in treatment of goiter from the earliest days of history, and its value is in the iodin it contains. Hippocrates, Galen, Pliny mention it, and the Chinese used it fifteen centuries before Christ. Iodin was isolated in 1811, and Coindet extolled it in treatment of goiter in 1820. He warned, then, that the patient taking it must be kept under close medical supervision. During 1920 Bircher encountered thirty-six cases of severe thyroid derangement for which iodin treatment was responsible. It had been taken under advice of

a physician in some, of a druggist in others, with self-drugging in the rest. In one woman of 42 with goiter 20 gm. of potassium iodid in the course of twelve weeks was followed by intense nervousness and excitement, tremor, salivation and palpitations, pulse reaching 116, and slight hemiplegia. On account of the heart disturbances—the exaggeration of which had been the indication for the treatment—Bircher did not dare to operate, and necropsy soon after revealed 380 mg. of iodin in the thyroid, which weighed 400 gm. The goiter had developed many years before in connection with a childbirth. The operation in these cases was always exceptionally difficult and tedious. The physiologic iodin content of the thyroid is from 2 to 9 mg., he adds; in these cases it reached 20, 30, and in the above case, 380 mg. Over 50 per cent. of internally treated goiters return in one, two or three years, and the surgeons report a similar proportion of recurrences after thyroidectomy. We must bear in mind further that exophthalmic goiter proves fatal in an average of 25 per cent. of the cases. Notwithstanding the extensive research on iodin and the thyroid in the last hundred years, the physiology and pharmacology of iodin is so uncertainly known and the experiences with it have been so contradictory that it seems like a dangerous experiment to give this metallic poison, in food or drinks, on an extensive scale and for long periods. To give it indiscriminately to the iodin-refractory and the iodin-susceptible, the thyroid sound or pathologic, is an irresponsible procedure. He says of the Ohio experiment with iodin prophylaxis in the schools that it is far from convincing, as also similar experiences in Switzerland. He calls attention further to the differences between goiter in America and in Switzerland, and cites figures from different regions in Switzerland showing goiter in 72 to 100 per cent. of the schoolchildren, while all but 3.3 to 9 per cent. of the recruits from those regions were free from goiter.

Iodin Content of the Thyroid.—Herzfeld and Klinger report from Zurich the iodin findings in 201 tests made of thyroids in the fall, the winter and spring. In fully 45 per cent. the tests failed to reveal any appreciable iodin. This group included 37.5 per cent. with apparently normal thyroid, and 41.2 per cent. with pronounced goiter. The group with iodin content between 0.06 and 0.15 per thousand included 37.5 per cent. normal thyroids, to 22.5 with goiter. The iodin content averaged decidedly higher in summer than in winter; possibly the summer green vegetables may be responsible for this, or the iodin metabolism may be more active in winter. In 39 thyroids from Holland, the tests failed to reveal appreciable iodin in only 21 per cent., in comparison to the 45 per cent. of the Swiss goiters. The domestic animals with no appreciable iodin in the thyroid formed 33, 24 and 100 per cent. of the Swiss cattle, hogs and dogs tested. The food of Dutch domestic animals is evidently responsible for the higher average of the iodin content found in them. All the data sustain, they say, the unconditional necessity for the use in Switzerland of iodized table salt, as from 30 to 50 per cent. of all persons have no iodin or only traces of it in the thyroid during a large part of the year.

Resection of Stomach for Perforated Ulcer.—Eberle adds another successful case of gastrectomy for perforated ulcer to the fifty operative cases of the kind on record. The mortality has been remarkably low. The outcome depends less on the surgeon's skill than on the practitioner's differential diagnosis in time.

Pediatria, Naples

July 15, 1922, **30**, No. 14

*The Schick Reaction. L. Spolverini.—p. 633.
Leukanemia in Breast Fed Infant. G. Caronia.—p. 646.
*Nature of Pseudoleukemic Anemia. E. Mensi.—p. 652.
Congenital Ichthyosis. S. de Stefano.—p. 672.

The Schick Reaction.—Spolverini injected an antiserum or antitoxin in twenty-four children giving a positive Schick reaction but with nothing to indicate diphtheria otherwise. The Schick reaction became negative thereafter, regardless of whether diphtheria antitoxin or normal serum or an antiserum of some kind had been used. The Schick reaction returned to positive a day or two later in all the cases. These paradoxic findings might be explained, perhaps, by assuming that the serum transiently upset the colloid balance in some way.

Pseudoleukemic Anemia in Infants.—In the four cases reported by Mensi, none of the children were 20 months old, and all presented the characteristic anemia and enlargement of spleen and liver and the blood changes. This splenomegalic anemia, as he prefers to call it, seems to be a special biologic reaction to various anemia-producing causes, and is thus a variant of ordinary secondary anemia.

Riforma Medica, Naples

June 19, 1922, **38**, No. 25

*Continuous Jacksonian Epilepsy. G. Cristel.—p. 577.
Intermediate Metabolism in Epileptics. A. Barlocco.—p. 580.
Invagination of Intestine from Lymphosarcomatosis. O. Carlo.—p. 581.

Continuous Jacksonian Epilepsy.—The young woman had had epileptic convulsions in the right arm continuously for twenty-two years, following a fall on head and shoulder. This continuous partial epilepsy had proved refractory to all measures. The spasms display the rapidity of a tic, while the movements of the arm are suggestive of chorea, but they differ essentially from both tic and chorea. An uncle had died in status epilepticus and a sister has typical epileptic seizures, but there is no history of alcoholism in the family. The rolandic region was opened up but nothing pathologic was found except that the dura was a little thicker than usual, and pulsating. Hemiplegia followed the operation, but this subsided in a few days and the epilepsy returned the same as before.

June 26, 1922, **38**, No. 26

Suspension Stability of Erythrocytes in Malaria. M. Aresu.—p. 601.
*The Oncopleural Reflex. C. Minerbi.—p. 603.
The Drainage Question. M. Balsamo.—p. 607.
Hydrosalpinx. E. Aievoli.—p. 609.
Natural and Artificial Heliotherapy. M. Reale.—p. 610.

Reflex Congestion of Lymph in Pleura.—Minerbi describes a reflex response to pinching of the skin on the chest which is manifested by development in from two to eight seconds of a small area of dulness. He calls it the oncopleural reflex, and explains it as a circumscribed congestion with lymph in the parietal pleura. He assumes that the parietal pleura is erectile, and responds to congestion with lymph as other erectile organs respond to blood. This explanation may apply to certain other reflexes in the chest which have been attributed to the lungs. The oncopleural reflex can be examined with roentgenoscopy as well as with auscultation. When the reflex is elicited simultaneously on both sides of the chest, if the circumscribed resonance is much more extensive on one side than the other, adhesions may be suspected. This may prove useful as a guide in artificial pneumothorax.

Rivista Critica di Clinica Medica, Florence

April 15, 1922, **23**, No. 11

*Fatal Cocain Poisoning in Addict. M. A. Mancini.—p. 121.

May 15, 1922, **23**, No. 14

Functional Tests of the Kidneys. D'Arbela.—p. 163. Conc'n.

Cocain Poisoning in Addict.—The young man died a few hours after he had complained of intense pain in the heart region. It was learned then that he had been taking cocain for some time. The dose had been the usual one, and Mancini suggests that the limit of tolerance had been surpassed or that the cocain he had been previously using had been adulterated, and he had happened this time to get a pure article.

May 25, 1922, **23**, No. 15

*The Autonomic Nervous System in Purpura. C. Alessandri and A. Terzani.—p. 169. Begun in No. 13, p. 145.
Diuretic Action of Tuberculin. P. Pennato.—p. 172.

The Autonomic Nervous System in Purpura.—Alessandri and Terzani tabulate the details in thirteen cases of hemorrhagic purpura, and call attention to the pronounced hypotonia in the vegetative nervous system as evidenced by repeated tests. In some it was most pronounced in the sympathetic nervous system, in others in the vagus. Hypotonia indicates insufficiency of the endocrine system, according to the latest views. Seven of the thirteen patients were suspected of tuberculosis. No general conclusions can be drawn

from these experiences except that the indications in each case have to be estimated individually.

Brazil-Medico, Rio de Janeiro

June 17, 1922, **1**, No. 24

*Cultivation of Schizotrypanum Cruzi. C. Magarinos Torres.—p. 317.
*Surgery in the United States. Oscar Clark.—p. 319. Cont'd.
Toxicity of Chenopodium. T. de Almeida Junior.—p. 324.

June 24, 1922, **1**, No. 25

Physiology and Clinical Aspect of Menstruation. J. Adeodato.—p. 335.
Toxicity of Chemopodium. Raul Leite.—p. 340.

Cultivation of Schizotrypanum Cruzi.—Magarinos Torres describes the most favorable conditions for cultivation of the micro-organism responsible for Chagas' disease. The hydrogen ion content of the culture medium seems to have a great influence.

Surgery in the United States.—Clark illustrates with portraits his historical sketch of surgery in this country and its contemporaneous exponents. He calls Harvey Cushing "the typical modern surgeon," J. B. Murphy, "the genius of the present generation," and Holmes, "the Lister of obstetrics." He quotes from the latter. . . . "Do not dabble in the muddy sewer of politics nor linger by the enchanted stream of literature nor dig in far-off fields for the hidden waters of alien sciences. The great practitioners are generally those who concentrate all their powers on their business." He cites Welch and Hektoen among the few who brought about the appreciation of the necessity for study of pathology, and he emphasizes the importance of this factor in the development of medical science in this country. He adds that the history of Johns Hopkins is the history of scientific medicine in America. "The organization of the hospital units was copied from Germany, but Osler insisted on having the clinical teaching on the English system, that is, the old Boerhave system." He refers to the "four bigs of Johns Hopkins," and to the efforts of the Council on Medical Education of the American Medical Association. Another Brazilian physician speaking recently of the grading and standard for hospitals in this country styled it a "stroke of true genius." Clark remarks in conclusion, "The opinion now prevails in America that the physician is the principal figure in the progress of the country, and it will not be long before the Europeans will have to cross the Atlantic to learn about modern medical organization." In his recent trip to the United States, Clark seems to have been impressed most by the hospitals, medical schools, training schools for hygienists, for nurses, the sanatorium at Saranac Lake, the Phipps Psychiatric Clinic, the Brady Urologic Clinic, the Rockefeller and the Mayo Foundations, and the "medical and scientific journals of the highest grade."

Crónica Médica, Lima

May, 1922, **39**, No. 707

*Artificial Pneumothorax in Pulmonary Tuberculosis. A. Corvetto.—p. 165.
*Modern Views on Physical Education. E. Vergne.—p. 189.

Artificial Pneumothorax.—Corvetto's experience includes only twelve cases, but marked improvement was noted in all and the progress of the disease was materially retarded.

Organized Movement for Physical Education.—This is an address delivered by Vergne at the army training school in Peru. He is a member of the French military inspection mission to South America.

June, 1922, **39**, No. 708

*Case of Venereal Granuloma. C. Morales Macedo.—p. 201.
*Elastic Pneumothorax. J. Gwerder-Pedoja.—p. 208.
Research on Gastric Digestion. E. Guzmán Barrón.—p. 213.
Child Welfare Work. R. Eyzaguirre.—p. 218.

Venereal Granuloma.—Morales describes the first case of this kind to be published in Peru. The diagnosis had been "cancer of the pubis" in the young man. Under intravenous injections of from 2 to 10 c.c. of a 1 per cent. solution of tartrate of potassium and antimony, every two or three days, a local favorable reaction was evident at once. By the tenth injection the edges of the lesion had healed solidly, and by the twentieth it was reduced in size and severity fully 50 per cent. Local treatment was restricted to rinsing off the surface with boric acid solution. The various findings and the healing under the tartar emetic corresponded to the classic picture.

Elastic Pneumothorax. — Gwerder-Pedoja writes from Davos to extol his method of what he calls *entspannungs-pneumothorax*, that is, by injection of only enough gas to induce retraction of the lung. He does not attempt to compress it completely. By this elastic pneumothorax he hopes to modify conditions enough to start the healing process, and his experience has been extremely favorable. This merely symptomatic treatment does not have the limited indications of the ordinary pneumothorax technic, and hence can be applied even with a focus in the other lung. He has never had any mishaps with it, and describes here a case in which this elastic pneumothorax was applied to the active cavity in the lung, with great improvement for a time. Then the symptoms became aggravated, and radioscopy showed two cavities in the lung below the other. He assumed that these were old, practically healed cavities which had been irritated and had flared up under the pneumothorax. He consequently reduced the amount of gas, aiming to act only on the upper, active focus. Conditions improved at once. The lower cavities became quiescent anew and the new one was arrested in its progress.

Prensa Médica Argentina, Buenos Aires

July 10, 1922, **9**, No. 4

*Epilepsy and the Endocrine Glands. Teresa Malamud.—p. 97.
Roentgen Ray Study of Case of Achondroplasia. A. Casaubon.—p. 101.
*Fatal Hemorrhage from Gastro-Enterostomy. Artemio Zeno.—p. 105.
Propaganda to Insure Early Treatment of Cancer. C. A. Castaño.—p. 108.

Epilepsy and the Endocrine Glands. — Malamud remarks that detection of morbid conditions in one or more of the ductless glands in epileptics is reducing the number of cases of so-called essential epilepsy. In a case previously published, the exceptional duration of the tonic and clonic spasms phase had attracted attention. In the case here reported, the young woman showed signs of inherited syphilis and partial adiposogenital dystrophia, unusually small sella turcica, with probable sclerosis of the pituitary gland, and grave epilepsy since puberty. The seizures were peculiar, the clinical picture resembling that of tetany except for the loss of consciousness. The assumption seems plausible that insufficiency of the pituitary and of the parathyroids is a factor in the epilepsy in this case, and the benefit under pituitary treatment has confirmed this. It was preceded by a course of mercurial and iodin treatment. Parathyroid treatment was not available at the time.

Fatal Hemorrhage from Gastro-Enterostomy.—Zeno reports three cases of this kind occurring in his service in the last ten years. The patients were men between 29 and 60 and the gastro-enterostomy opening was found intact in all. The hemorrhage had come from perforation of the ulcer for which the operation had been done. In one case the operator had been aware of the perforation but had supposed it safely walled in by adhesions. The repeated hematemesis occurred the same night or next day or the fifth day in his cases.

Semana Médica, Buenos Aires

May 25, 1922, **1**, No. 21

*Pyelitis in Infant. A. Zubizarreta.—p. 825.
*Diagnosis of Acute Hemorrhagic Pancreatitis. C. Preioni.—p. 829.
Opening Lecture of Course on Semeiology. P. J. Garcia.—p. 831.
Hydatid Cyst of the Kidney. E. Castaño.—p. 839.

Pyelitis in Infant.—The suppurating pyelitis in the infant only 4 months old was confirmed by the acid reaction of the urine, not modified by alkalines, the normal shape of the leukocytes in the pus, the retention of urine, and the enlargement of the right kidney. The urine voided from the other kidney was clear. Only one other instance of pyelitis in such a young child has been published in Argentina, but Zubizarreta states that he now has under treatment a case in an infant only 40 days old. No benefit in the first case was evident from the drugs used, hexamethylenamin, salol, methylene blue, potassium citrate, etc., but immediate improvement followed an autogenous vaccine, and the child recovered under this vaccine. It had to be kept up for months as there was pus in the urine for seven months. He ascribes the final disappearance of the pyuria to the improvement in the general condition brought about by a change to artificial feeding, as the child was not thriving on breast milk.

There was a constant drop in the temperature each time after the injection of the vaccine during the acute phase. The infant was of a healthy family, but an epidemic of "colds" had preceded the pyelitis.

Diagnosis of Acute Hemorrhagic Pancreatitis.—Preioni recalls that the diffusion and the apparent contradiction between the various abdominal symptoms are suggestive of acute pancreatitis. But a tender point 4 cm. above and 2 cm. to the left of the umbilicus is as constant and as significant as the McBurney point in appendicitis. The pressure, however, must be slow, gentle and sustained to elicit the pain at this point without inducing impeding reflexes. The pain thus elicited at this point was intense in all his ten cases of acute hemorrhagic pancreatitis at all stages of the disease, and he never found it but once in any other affection. This one exception was a case of gastric ulcer that had perforated and involved the pancreas.

Deutsche medizinische Wochenschrift, Berlin

June 30, 1922, **48**, No. 26

Two Different Effects of Narcosis on Muscular Tissue. E. Frey.—p. 857.
The Action of Thallium. A. Buschke and F. Jacobsohn.—p. 859.
Early Syphilitic Affections of the Central Nervous System. G. L. Dreyfus.—p. 860.
*The Phosphorus in the Blood. Vorschütz and Vorschütz.—p. 861.
Alkaptonuria and Ochronosus. K. Köster.—p. 863.
*Albee Operation in Tuberculous Spondylitis. H. Görres.—p. 864.
Interscapulothoracic Amputation. W. Fischer.—p. 864.
Treatment of Varicose Veins and Sequelae. T. Voeckler.—p. 865. Begun in No. 25.
Painless Treatment of Furuncles. Kritzler.—p. 866.
Epizootic Aphthae in Human Eye (Foot and Mouth Disease). W. Feilchenfeld.—p. 867.
Cell Count in Lumbar Puncture Fluid. E. Jacobsthal.—p. 867.
Remarks on Findings "Undernourished" and "Tuberculous." E. Neumann.—p. 868.
Yeast Substance for Bacterial Cultures. K. Thilo.—p. 868.
Theory of Fatigue and Mode of Recovery. J. Bauer.——p. 868.
Surgical Treatment of Shoulder Region. G. Ledderhose.—p. 870.
The Urologic Examination of Patients. L. Casper.—p. 872.
*Vital Statistics of German Cities in 1921. E. Roesle.—p. 873.

The Relative Phosphorus Content of the Blood, Especially in Cancer Patients.—The authors state that, from the clinical side, the determination of the amount of phosphorus in the blood may be of great importance in carcinoma as regards differential diagnosis, if one can rule out icterus, tuberculosis, pneumonia and typhoid fever, which are not difficult to diagnosticate as against carcinoma because of their acute febrile character. It is eminently desirable that in obscure cases in which an incipient carcinoma is suspected, the clinician shall ascertain the phosphorus content of the blood, and if it is found that the blood corpuscles, when washed and examined alone, contain a considerable excess of phosphoric acid as compared with an equal quantity of normal corpuscles, such a finding would strengthen the diagnosis of carcinoma. In fact they recommend that in so-called carcinoma families the phosphorus content of the blood of all members of the family be determined at an early age, as this would aid very much in the early diagnosis of carcinoma.

The Albee Operation in Tuberculous Spondylitis.—Görres defends the Albee operation against Lexer, who recently announced that he was absolutely opposed to it. He fears that this statement of a well-known surgeon will prevent many general practitioners from bringing their patients for such an operation. Görres reports excellent results in a series of 120 cases of spondylitis in which the Albee operation was performed in the Vulpius Orthopedic Surgical Clinic at Heidelberg. Here they perform this operation in almost all cases of tuberculosis of the spine in which the tuberculous focus stubbornly refuses to heal. Such intervention is only contraindicated if the operative area is not sterile; for example, on account of existing fistulas, or if the general condition of the patient is exceedingly bad, as sometimes in the presence of tuberculous complications in the lungs or other organs, which make recovery unlikely. Cases with accompanying paralysis are also excluded, since he has seen in these cases exacerbation of the paralysis, which made it necessary to resort to laminectomy.

Vital Statistics of German Cities in 1921.—This comprehensive study of the natural movement of city populations was mentioned later on page 755.

Medizinische Klinik, Berlin

July 9, 1922, **18**, No. 28

*Genital Metastasis of Gastro-Intestinal Cancer. O. Frankl.—p. 885.
The New Obstetrics. A. Dührssen.—p. 887.
*Rest and Exercise After Operations. A. Salomon.—p. 891.
Peptic Ulcer. Kirschner et al.—p. 894.
Tumor-Like Osteomyelitis. E. Melchior.—p. 895.
*Hemolytic Jaundice and Gout. E. Leschke.—p. 896.
Susceptibility of Children to Tuberculin. K. Dietl.—p. 897.
Dangers of Underdosage in Arsphenamin Treatment. E. Pulay.—p. 899.
Cantharides Blisters for Serologic Tests. Thomas and Arnold.—p. 899.
Insects in Transmission of Disease. E. Martini.—p. 900.
Rudiments of Obstetrics. E. Runge.—p. 902. Cont'n.

Relations Between Gastro-Intestinal Cancer and Female Genital Organs.—Frankl remarks that the frequent metastasis of cancer in the ovaries and in the pouch of Douglas, with primary malignant disease in the digestive apparatus, throws light on metastasis in general. He has been studying 10 certain and 5 dubious cases of metastatic ovarian cancer, and 65 primary ovarian cancers and 11 secondary to cancer in the uterus. Transmission by implantation is rare with metastatic ovarian cancer. In all in this group, minute endolymphatic metastases were found in the uterus, while this was never found in the primary ovarian tumors. The minute daughter tumors on the uterus in 23 cases of primary ovarian cancer were unmistakably implantations. In 36 primary ovarian cancers there was no metastasis or implantation of any kind. Only with the gastro-intestinal metastatic ovarian cancers were the endolymphatic metastases found in uterus and tubes. Everything testifies that these metastases were secondary to the primary cancer, not a third generation, through the ovarian cancer. They all developed simultaneously, but the conditions for growth proved most favorable in the ovary. If an operation is attempted, the uterus must be removed entire. With a primary ovarian cancer this is not necessary: If the ovarian capsule is intact there need be no fear of implantation tumors. When contemplating an operation on cancer of the digestive apparatus, if the uterus and tubes are found abnormally hard, this change in consistency warns that metastasis is already installed. The endolymphatic metastatic tumor emboli plug the lymphatics and there is stasis of lymph, thickening of connective tissue, and a hardening of the entire organ. When a patient complains of suspicious stomach disturbances and the ovary is enlarged and hard and the uterus feels hard as cartilage, although not enlarged, we can be almost certain that malignant disease is installed in the stomach.

Rest and Exercise After Operations.—Salomon says that after the period of excessive immobilization in surgery followed the period of excessive exercise. Now we use both immobilization and exercise, without going to extremes in either, and he outlines the indications with different surgical affections. With tuberculosis, the important thing is to refrain from immobilizing procedures while not allowing any weight bearing. Bed rest is the simplest means of insuring these two points. The advantages of getting the patients up early after a laparotomy can all be realized in bed by breathing exercises and cautious exercise of the limbs, without the dangers of getting the patient up. This "active repose" is far safer for the first few days, unless possibly for the elderly. With contusions and sprains, six to eight days is generally enough immobilization. With fractures, twice this period, exercising the joints nearby diligently. Every joint has its special repose position; that is, the position which is most useful in case of ankylosis. In beginning passive movements we must never induce pain.

Hemolytic Jaundice and Gout.—Leschke's patient was the third generation with hemolytic jaundice, and in the first and third generation it was accompanied by severe gout. Two other members of this last generation had hemolytic jaundice. In another family it reappeared in three generations, and one young woman of the third generation had 4.2 per thousand uric acid in the blood. He thinks that this is more than a mere coincidence, and that there is some causal connection.

Zentralblatt für Chirurgie, Leipzig

May 13, 1922, **49**, No. 19

*Coma Parathyreoprivum. E. Melchior.—p. 667.
Modification of the Bassini-Hackenbruch Operation for Inguinal Hernia. H. Neuffer.—p. 669.

Hernia Juxtavesicalis Dextra Incarcerata. C. Bayer.—p. 671.
Case of Hernia Inguinalis Directa Sinistra Incarcerata. Düttmann.—p. 674.
Extirpation of Wandering Spleen with Twisted Pedicle. Hanns Brossmann.—p. 675.

Coma Parathyreoprivum.—This term has been proposed by Melchior to designate a peculiar type of postoperative tetany that is not characterized by manifest convulsions. Especially in men, this condition of deepest coma occurs occasionally immediately following extensive reduction of goiters. Most cases of this kind seem to end fatally.

Zentralblatt für innere Medizin, Leipzig

May 13, 1922, **43**, No. 19

*Amidopyrin Test for Occult Blood. Fortwaengler.—p. 313.

Amidopyrin Test for Occult Blood.—Fortwaengler remarks that all the requirements for a test to demonstrate invisible blood are fulfilled by the amidopyrin test introduced by Thévenon and Rolland. It was described in THE JOURNAL, Oct. 26, 1918, p. 1443, as the "pyramidon color reaction in the presence of an oxidizer." Fortwaengler uses a little more of the acetic acid and of the oxidizer than the original technic calls for, and cites a number of favorable experiences with the test that have been published by others. The reagents are: (1) 5 gm. of amidopyrin in 100 c.c. of 90 per cent. alcohol; (2) 25 parts of glacial acetic acid in distilled water to 50 parts; (3) 3 per cent. hydrogen peroxid. The original formula specified hydrogen dioxid at twelve volumes. He adds to 2 or 3 c.c. of the fluid to be examined 16 drops per cubic centimeter of the acetic acid solution. Then 2 c.c. of the amidopyrin solution, and 12 drops of the hydrogen peroxid. Instead of shaking up the mixture, as called for by the original technic, he applies the method as a contact test. The amidopyrin solution is poured on top of the fluid after the acetic acid has been added. Then the peroxid solution is allowed to flow down the side of the test tube. A violet zone forms at the line of contact in the positive reaction.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

June 10, 1922, **1**, No. 23

*Syringobulbia. E. A. D. E. Carp.—p. 2239.
*Estimation of Effect of Massage. C. Bles.—p. 2247.
*Self Purification of Vaccine Lymph. J. W. Janzen and L. K. Wolff.—p. 2252.
Organic Disease of Nervous System After Influenza. G. C. Bolten.—p. 2255.
Anomalies of First and Second Ribs. J. F. O. Huese.—p. 2261.

Syringobulbia.—Carp explains that when the process that is responsible for syringomyelia is located in the medulla oblongata, the clinical picture is quite different. Two cases of this syringobulbia are described. The women were 32 and 39 years old, and the disturbances were exclusively or predominantly on the left side.

Effect of Massage.—Bles injected bismuth carbonate or India ink into symmetrical joints in rabbits, and then systematically massaged the joints on one side. Roentgenoscopy and the postmortem findings showed that neither the contrast suspension nor the ink had been forced along by the massage. The findings in and around the joints were exactly the same on both sides, with and without any mobilization of the substances injected, thus disproving assertions in regard to the mechanical effect of massage.

To Clear Vaccine of Bacteria.—Janzen and Wolff comment on the reason why addition of glycerin clears vaccine of bacteria. Glycerin has very little bactericidal action. Its efficacy in freeing the vaccine of bacteria has been a mystery, but they suggest that the explanation may be a bacteriophagic action in the vaccine as it is kept fresh by the influence of the glycerin. The latter allows time for the self-purification of the vaccine by its own bacteriophagic action. They suggest that this might be hastened by addition of a stronger anti-staphylococcus bacteriophagum.

Norsk Magazin for Lægevidenskaben, Christiania

August, 1922, **83**, No. 8

*Fever in Relation to Asthma. P. F. Holst.—p. 577.
Bleeding from the Mamma. J. K. Hald.—p. 592.
Serotherapy of Measles. O. Jervell.—p. 601.
The Alkali Reserve in Epilepsy. S. K. Mørdre.—p. 603.
Pulse in Influenzal Pneumonia. F. Leegaard.—p. 610.
Erythema Nodosum. W. Holland.—p. 626.

Fever in Relation to Asthma.—Holst recalls that it is an old experience that persons with asthma may be free from attacks during an intercurrent febrile disease. He does not know, however, of any record of experiences such as two he relates in which the period following a febrile state was free from attacks. He gives the chart of one man of 31 who had been having asthma for two years, the paroxysms growing progressively more frequent and severe. In the course of the two years there were seventeen periods during which there was more or less fever, without known cause, lasting for a day or up to nearly a week. After twelve of these febrile periods, there were no further paroxysms of asthma—which before had been recurring every single night. These periods of freedom from the attacks lasted from two, three or five days up to twelve, twenty-five and twenty-six days before the asthma swooped down on him again. No effect on the paroxysms was noted after five of the febrile periods, and the height and duration of the fever did not seem to be influencing factors. Attempts to induce fever artificially, with tuberculin, glucose, gonococcus vaccine, peptone or autoserum, all failed to show the slightest influence on the asthma. An old asthma patient wrote to Holst recently that she had noticed that after intercurrent febrile infections she was relieved of her very severe asthma for a time, and she asked him to experiment with artificial fever. But no benefit was derived, except transiently after the first time tuberculin was given, and the attempts were abandoned after two or three months. Holst theorizes to explain the action of measures against asthma according as they act on the periphery, on the vagus center in the brain, or on the bronchial mucosa. Epinephrin depresses vagus functioning by stimulating the sympathetic system. Caffein and theobromin act in the same way. The benefit from iodid is probably due to its stimulating effect on the suprarenals.

Ugeskrift for Læger, Copenhagen

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Multiple Sclerosis.—Krabbe compares the classic form with the more frequently encountered form of disseminated sclerosis, and emphasizes the differences. In ten of the thirteen cases described there was no nystagmus, no tendency to scanning speech, and no intentional tremor. In one of the others there was slight nystagmus. But the whole group show that the optic-pyramidal type of the disease is more common, at least in the beginning. The symptoms to be looked for are temporal optic atrophy and spastic and reflex anomalies in the legs. Next in frequency comes the group with diplopia and slight sensory and sphincter disturbances. Third in order comes the Charcot triad, the classic type of multiple sclerosis. Some of the patients described were treated with arsphenamin, and favorable reports have been published elsewhere. The drug certainly has done no harm, and there is an increasing tendency to regard the disease as of infectious origin. The earlier it is diagnosed, the greater the prospects of benefit from the medication.